HERBAL MEDIC

A GREEN BERET'S GUIDE TO EMERGENCY MEDICAL PREPAREDNESS AND NATURAL FIRST AID

SAM COFFMAN

FOUNDER OF HERBAL MEDICS ACADEMY

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I wrote this book in memory of my father, who taught me to appreciate our natural world, and my mother, who with her passion for gardening taught me to talk to plants at a very early age.

And I dedicate it to all of my students—past, present, and future. I hope it serves you well.

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PREFACE

I remember hearing the sound of my bone breaking as I hit the ground, hands outstretched. It hadn't been a very impressive jump, but my mountain bike hit a patch of sand as I landed and over the handlebars I went. The resulting collision pulled a piece of bone away from the base of the thumb on my left hand in a classic avulsion fracture.

I had arrived at Fort Bragg a few days earlier, having made it through the Special Forces Assessment and Selection (SFAS, or "Sore Feet and Shoulders," as we called it) and Airborne School of the qualification course for the US Special Forces. After 8 months at Fort Sam Houston in Texas training as a battlefield medic, I was facing "med lab"—a whole new level of training and experience.

This program was designed to produce the best austere medics in the military—and to wash out anyone who could not handle the pressure. ("Austere" here means operating with limited supplies and support.) More than half of my original class was already gone. This second phase would be worse. And here I was in the middle of the woods, with a broken thumb less than a week before starting the most arduous training I would ever undergo.

After several hours of denial, I went over to the med lab compound and X-rayed the thumb myself. Sure enough, I had a prominent avulsion fracture, with several millimeters of separation between the bone and the large piece that had been separated from it. At this point I realized that I needed to see a doctor, so I went to the post's hospital, where the orthopedist

told me I needed surgery and would have to postpone the hands-on training. I stubbornly insisted that he just put a cast on it, because my son's third birthday was coming up and delaying my training would mean missing more time with him.

After some arguing and against the surgeon's better judgment, he agreed to put on a cast. I went back to the barracks, where I promptly cut the cast off and got a ride into town where I'd noticed a store that carried bulk herbs. I bought a pound each of comfrey (*Symphytum officinale*) and horsetail (*Equisetum* spp.).

Using big gauze pads held in place by an elastic wrap bandage, I soaked my thumb with a wet poultice of both herbs almost 24/7. When I reported for the first session of goat lab (so called because we worked on live animals), I was relieved to find myself assigned to the half of the class that was learning lab techniques rather than practicing treatment of trauma. This meant that I had a 3-week reprieve before I would have to use my broken thumb in daily trauma scenarios.

The instructors knew that I had a broken thumb and were undoubtedly just waiting to see what would happen, but I was convinced that I could make it if the thumb would heal enough to allow me some grip strength. During trauma training, we worked with goats who were fully anesthetized and then given life-threatening injuries, from blocked airways to fully eviscerated intestines spurting arterial blood. These scenarios ran all day, every day, and my thumb would ache for hours after, for example, using kung-fu grip strength with my left

hand to align and expose the trachea for the scalpel in my right hand.

Thanks to the amazing tissue proliferation brought on by the comfrey and horsetail, my thumb had healed rapidly, and I continued the poultices for another month into the course. By the time I was getting ready for the next phase, I had full grip strength back and only minor pain when stretching my thumb in certain directions. To this day, I have no arthritis or pain or difference in grip strength between my right and left hands.

That injury was my rite of passage into herbal medicine. I had been interested in medicinal herbs prior to my Special Forces training, and I had studied just enough to know that comfrey and horsetail were reputed to be extremely effective in healing a broken bone. However, experiencing rapid healing myself, in a situation of very high stress, gave me a whole new level of appreciation for and trust in herbs as medicine. I continued to study herbal medicine, and it balanced all of the orthodox medicine I was learning as a Special Forces medic.

I love medicine for many reasons, but one of the biggest is the way it challenges you to keep learning. When you study medicine—whether you are in medical school or teaching yourself herbal medicine from books or anywhere in between—you are on a path that will never end for as long as you choose to follow it. More importantly, you can choose the direction you want to travel. Nobody has all the answers in the world of medicine, and you will never learn all there is to learn on this subject.

When I began to study herbal medicine in earnest, my own ways of thinking about how the body heals began to expand. My ideas about the physiology and pathophysiology of the body

as it relates to herbal medicine have evolved over the years, and I work with doctors who put my ideas to the test every single day. The more they work with herbal medicine, the more they keep returning because it is so effective. Herbal medicine provides some wonderful backstops to many of the holes that exist in conventional medicine today—and these are holes not only in the actual medicine itself, but also in regard to its availability in a health care system that is filled with flaws.

Whether you read this book from cover to cover or use it as a reference by chapter, I hope that my own experiences in the world of herbal medicine over the past 30 years will prove useful.

INTRODUCTION

While this is a book about herbal medicine, it fully embraces the need for a solid foundation in emergency and orthodox medicine for anyone working in health care. The heart and soul of the concept of the "herbal medic" is grounded in the idea that medicine should be as sustainable as possible, while also being accessible to everyone. The herbal medic should ideally be able to work with the medicine that grows in forests, deserts, jungles, and, of course, our own gardens. However, the herbal medic also needs a thorough understanding of disease and injury from an orthodox point of view. This is essential for acknowledging the need to seek higher medical care when a medical situation is beyond our ability to help.

However, in my experience there is a helpful application from the world of plant medicine for nearly every illness or injury. It might be herbs to help with nausea from chemotherapy, or an herbal formula that is far more effective than expensive pharmaceuticals for a viral infection. It could be herbs to help a bone fracture heal or herbs to help with the respiratory difficulty of asthma. The spectrum of health issues that can be addressed with herbal medicine is huge. So too is the spectrum of effectiveness, depending on the condition, underlying factors (e.g., nutrition, lifestyle, age, health conditions), what herbs are used, and how those herbs are used.

With that in mind, it is likely that the readers of this book will come from many backgrounds. Some may be doctors or

otherwise licensed health care providers. Some may be clinical herbalists. Some may be folks who are concerned with preparedness for disaster. Some may be herbal hobbyists who are just starting on their own journey to explore plant medicine.

Whatever your background, the purpose of this book is to define and teach all aspects of being an herbal medic, both in the field and at home. Outside of basic first-aid skills, the medicine we will discuss is specifically plant medicine. I believe that the herbal medic should be prepared to be the primary caregiver not just in the first few minutes of an injury or illness but for the first few hours or days, and potentially even for weeks and maybe months, depending on the situation. That's why this book is written primarily for an audience living and working in remote locations or interested in preparing for post-disaster scenarios.

That said, a foundation of practical herbalism is also very useful around the average home, and the information provided here can be used by professionals of all background and training, from doctors, nurse practitioners, and nurses to clinical herbalists. But above all, this book is intended to help anyone and everyone who desires greater self-reliance and sustainability in their own health care.

USING THIS BOOK

You can read this book from cover to cover, and you can also use it as a reference manual. The index, glossary, and materia

medica offer easy access to definitions, explanations of concepts, first-aid instructions, and plant profiles. It is impossible to teach herbal medicine concepts without first introducing certain cultural understandings and vocabulary from the world of plant medicine. This is true whether you are working with trauma, acute or chronic illness, or recovery from trauma or surgery. The first thing you must realize is that in the tradition of Western or orthodox medicine, our understanding is shaped primarily by pharmaceutical medicine.

Plant medicine arises from an entirely different context of holistic, multifaceted healing. As an example, even though aspirin is derived from constituents found in willow bark (*Salix* spp.), you can't simply apply willow bark in the same way you would administer aspirin. From the perspective of plant medicine, using a single constituent—in this case, salicylic acid—out of the thousands of constituents found in willow bark is nowhere near as effective as using the whole plant, understanding the mechanism of inflammation, and taking advantage of the ways in which many different herbs can work though various pathways in the body to help heal inflammation.

This book is designed to create a foundation and then build on it. Part 1 concentrates on orthodox topics such as creating first-aid kits, bandaging and splinting, and supporting musculoskeletal injuries.

Part 2 explores some of the most important aspects of working with herbs, beginning with a basic understanding of the body. How do we approach an upper respiratory tract

infection versus a urinary tract infection? Can one herb have different effects on different organs? What are the most effective ways to help different types of tissue heal? How do we make medicine from herbs? What is a formula, and how do we figure out which herbs to combine for a specific formula?

Understanding the process of disease provides a foundation for understanding the larger process of working with illnesses and injuries. A well-designed healing protocol may involve not just herbal medicine but also lifestyle adjustments, nutrition, stress management, and more. As we look at organ systems, we will also talk about the causative factors in disease—in particular, chronic disease.

First aid is the mainstay of the herbal medic. First aid is to acute illness and injury what nutrition and an understanding of organs and pathophysiology are to chronic illness. And so Part 3 covers topics that can be described as "herbal first aid in action." Here you'll learn how to assess and treat injuries, infections, illnesses, and more. It is vital that you have some understanding of how to implement these methods in a post-disaster or remote environment in order to be an effective herbal medic both in the field and at home.

In Part 4 we move into the materia medica, a list of plants that are used medicinally. It includes 70 herbs that I use frequently, listed by common name. Information includes the parts of the plant used, medicinal uses, and preparation/administration protocols. Most are native to or can be cultivated in North America, though some are found more commonly outside this continent. All of them can also be purchased as dried herbs in bulk from herb suppliers.

WHY "HERBAL MEDIC"?

I've been fascinated with the concept of the herbal medic for over two decades. Medics respond to any type of complaint of someone seeking medical care in the field, including trauma or acute illness. A medic—by my own definition and experience—can be a first responder, a doctor, a nurse, a counselor, a paramedic, a critical care health provider, or any combination of these. Aside from stabilizing injuries and wounds and providing initial treatment for any range of health care issues, the medic also has to provide continued advanced first aid and emotional support, while documenting a patient's condition and care. The medic monitors the patient until handing them off to higher care. An *herbal* medic can perform many or even all of those tasks using plant medicine instead of pharmaceuticals. Herbal medics must be able to identify plants, know how to extract medicine from them, and understand how to apply those medicines correctly.

Knowledge of herbal medicine is useful around the home, on the trail, and in the wilderness. It can be vital in places where pharmaceutical medicine is limited. And it can be life-saving in post-disaster situations, when people are desperate, the rule of law has been abandoned, and food, water, and medicine (not necessarily in that order) are among the first things to be looted or taken by force. In any austere environment, even if you do have pharmaceutical medicine available, you have to know how to administer it correctly and how to deal with rationing what you use, which can create all sorts of unexpected issues.

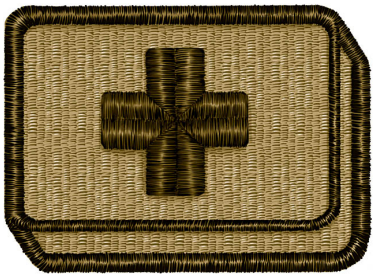
Plant medicine is truly a “living” medicine. While we can, to a limited extent, break down the actions of the constituents inside the plant, we are not able to quantify the effects of living medicine—sometimes called vitalism—in the same way. The efficacy of any herb will vary depending on where it grows, the soil and other conditions it grows in, how and when it is harvested, and how it is prepared, formulated, and dosed. An herbalist must have a relationship with and understanding of plant life and its interaction with the human species. Human beings have coexisted with, coevolved with, and relied upon plant food and medicine for the entire duration of the existence of our species.

That relationship is deeper than we can duplicate with a pharmaceutical drug, a vitamin tablet, or even an encapsulated herb. That relationship is vital for our health, in fact. As the myriad chronic diseases and inflammation-related disorders in our population right now show us, our health is intrinsically connected to the health of the soil and the plants around us. Herbal medicine offers us a rooted connection back to the world that we rely on for our food, our clean air, our clean water, and, of course, our plant medicine.

PART 1

ORTHODOX FIRST AID

CHAPTER 1
THE FIRST-AID KIT



Becoming an herbal medic begins with a basic understanding of what I would call “orthodox” first aid. Anyone reading this book certainly knows how to put on a Band-Aid and why it’s important to wash a scraped knee to clean off the dirt. Beyond that? It depends on your experience. Experience and knowledge are probably the most important tools in any first-aid kit.

It is usually a waste of space to pack anything you don’t know how to use. In fact, you can evaluate your first-aid skills just by packing your kit. In doing so, you can also learn more about how to use your equipment for multipurpose applications—which means that you will be better prepared to handle emergency situations when resources are scarce.

Let’s say that you are preparing for a camping trip. You have an empty day pack and a bunch of first-aid gear spread out in front of you. You start trying to decide which items are necessary, which items are too heavy to be worth carrying, and so on. Take that fancy aluminum finger splint. It seems bulky.

How often would you need it? How would you use it? Are there alternatives? Is it used just for fingers? What about toes? Do you need a splint like this one, but for toes?

So many questions! So perhaps you do a little research, and you learn about "buddy-splinting," where an injured finger or toe is taped to the finger or toe next to it (see here). Since you're bringing tape anyway, you decide to leave the finger splint at home.

Whatever items you put in your kit, you should already have used each of them at least once so that you're familiar with how to open the packaging, prep them, and apply them. If you're buying a new item for your kit, such as a compression bandage or tourniquet, buy two: one for your kit and one to practice using. Ideally, you should be able to use all the items even in high-stress and low-light situations.

Finally, it's important to actually *use* your kit. This ensures that you are using and replacing items so that your supplies are always relatively new, and it also means that you know exactly what you have in stock and where each item is located.

LET THERE BE LIGHT

To test your first-aid kit in real-world conditions, take it into a dark room and then have someone invent an injury that urgently needs treatment. How long does it take before you have the correct materials in your hands, opened and ready to use? Time yourself.

This exercise should alert you to the fact that one of the most important items to have readily available in your kit is some form of light, such as a headlamp (preferably) or a flashlight. You can't count on only needing your kit at a picnic on a warm, sunny day where everyone is calm, cool, and collected. You may well find yourself at the scene of a car wreck in the middle of the night, with pouring rain and a screaming adrenaline rush. Prepare and pack your first-aid kit so that the worst-case scenarios are manageable and the best-case scenarios are a breeze.

SUPPLIES AND TOOLS

Let's run through a list of common first-aid tools and supplies, including their specific uses. Bear in mind that in any kit, space (and carrying weight) is at a premium. In my experience, the more multipurpose items a first-aid kit has, the more complete the kit will be. Try to keep any single-purpose pieces of equipment restricted to items that are high-efficiency life-saving gear, like ready-made chest-seal occlusive dressings and ready-made tourniquets, where saving even a few extra seconds by having exactly the right tool at hand may make a difference.

TAPE

ATHLETIC TAPE. It doesn't stretch, sticks well to skin, and has a good torsion strength (ability to withstand a twisting load). This means that it lends itself well to being a musculoskeletal support for injured joints, muscles, bones, and connective tissue, like a sprained ankle. A 1½- or 2-inch roll is most useful for taping, bandaging, and splinting.

KINESIOLOGY TAPE. K-tape, as it's often called, or KT tape (after the popular brand), is designed to provide support without limiting movement. It is not as strong as athletic tape, but is very useful for supporting injured but non-weight-bearing joints and musculoskeletal structures that need to remain functional for repeated flexion and extension. You might, for example, use k-tape to support sprained wrists, shoulders, ribs, and fingers.

MEDICAL/SURGICAL TAPE. It's strong and doesn't stretch, and it's usually gentler on the skin than athletic tape or k-tape. It can be used to hold bandages on the skin and as a backup for athletic tape, if necessary. I usually stock Durapore surgical tape in my kit.

ADHESIVE WOUND CLOSURE STRIPS. Wound closure strips, sometimes called Steri-Strips after the 3M brand, can be easily made from medical tape (or any type of tape, really), but the ready-made versions take up almost no room and weigh next to nothing. They're also packaged in a way that allows them to be very easily applied. They're designed to help close small lacerations, pulling together the skin on either side of the wound.

DUCT TAPE. Duct tape has a multitude of uses for first aid and beyond—well beyond! It can stand in for athletic or even medical tape, if necessary, though its adhesive is not gentle on the skin. From making slit-style sunglasses to taping sticks together for an improvised field litter, it is a good multipurpose tape to have in any survival and/or medical kit.

Make a small roll by rolling about 10 to 20 feet of duct tape around a pencil; before you start rolling, fold the adhesive side back on itself for the first few inches so that the first couple of rounds of tape around the pencil don't stick and you can pull off the whole roll when you are finished.

BANDAGES AND WRAPS

BAND-AIDS. These small adhesive bandages—or Band-Aids, as most of us call them, after the brand-name product—are probably the most obvious items to include in a first-aid kit, but it always surprises me how many times they are needed, in various sizes, in the field. Their primary purpose is usually to keep an injury as clean as possible. They are far easier and faster to apply than tape and gauze, and I recommend having them in a variety of sizes.

MOLESKIN. Moleskin is pretty well known as a preventive and treatment for blisters. However, it is also useful for preventing chafing anywhere on the body where you might expect a lot of friction. Consider packing it with tincture of benzoin (which comes in small vials with a cotton applicator), which works

well as an organic glue to adhere the moleskin more securely, even to wet skin.

GAUZE. Gauze is critical for covering wounds, packing and providing pressure on hemorrhages, protecting burns, and more. It is also extremely useful for making herbal poultices and plasters. Pack a variety of sizes of gauze dressings, from 4 × 4-inch to 2 × 2-inch, and also a gauze roll.

ELASTIC WRAP. Elastic wrap (sometimes called an ACE bandage after the brand-name product) has a multitude of uses, from holding splints, bandages, and poultices in place to providing compression around soft tissue injuries, and more. The classic "gauze + elastic wrap" combination makes a very functional compression bandage over arterial bleeds—usually as good as any premade compression bandages on the market. As an added benefit, elastic wrap can be washed and even sterilized in boiling water for multiple uses. The 2- and 3-inch rolls are most useful.

SELF-ADHESIVE VET WRAP. Vet wrap (such as Coban) is very useful, particularly for bandaging minor lacerations, abrasions, and burns. Because it is stretchy, can be torn or cut, and sticks to itself, it makes a great fast wrap for everything from buddy-splinting fingers and toes to bandaging dressings over a deep laceration. Vet wrap gets its name from the fact that it is often used by veterinarians, but it works just as well for humans. Unlike elastic wrap, vet wrap is normally only single-use, and it's not as strong (although it's still strong

enough to impede circulation if you accidentally wrap it too tightly), but it's very easy to use.

COMPRESSION BANDAGE/PRESSURE DRESSING. Premade compression bandages, sometimes called pressure dressings, are generally designed for one-time use, but they're helpful to have in the event of life-threatening trauma because you can unwrap and apply them very quickly. I like the Olaes Modular Bandage, which has at least four separate uses: You can use it as a compression bandage, you can pull out its sterile gauze and use it to pack a wound, you can repurpose its plastic sheet for use as an occlusive dressing, and you could conceivably convert its plastic cup (used for point pressure) to an eyewash cup.

CRAVAT BANDAGE. A cravat bandage, a.k.a. a triangular bandage, is arguably the most multipurpose and practical item that you could possibly put in a first-aid kit. Its uses are legion, from slings, bandages, and wraps to prefilters for dirty water, head or face coverings to protect from sun, smoke, or dust, and more.

FLEXIBLE PADDED ALUMINUM SPLINT. Lightweight, malleable, and easily cut, aluminum makes an excellent splinting material. Padded, flexible, reusable aluminum splints are often called SAM splints (after the brand-name version, in which SAM stands for "structural aluminum malleable").

A splint can, of course, be made from anything that is relatively rigid, such as cardboard, newspaper, tree bark, wood, and so on. However, an aluminum splint that comes in a

packable roll form has many uses, from splinting broken bones to stabilizing injured joints. SAM-style splints are made in a variety of different sizes. It's generally best to buy the largest size, as they can be easily cut or folded down as necessary.

DRESSING VS. BANDAGING

Sterile gauze is the **dressing**—the part that makes contact with the wound—of choice for injuries in the field. **Bandaging** holds the dressing in place. Both are important for any first-aid kit.

OCCLUSIVE DRESSING. An occlusive dressing, sometimes called a chest seal, is an airtight, watertight, self-sealing bandage; it has many applications but is primarily used to seal a chest wound that may have caused an opening into the lungs. It can be improvised using plastic and tape, but the quality of an improvised occlusive dressing can be poor, especially on a hairy, dirty, or bloody chest.

Ready-made chest seals, like the HyFin brand, take little room and add almost no weight to a first-aid kit, and they are very quick and effective in cases of chest wounds, when seconds may count.

TOURNIQUET. Similar to a ready-made occlusive dressing, a tourniquet is one of the few premade, single-purpose items you might want in a first-aid kit. There are many different styles

and brands; look for one that can be applied with one hand (in case you ever need to put it on your own arm) and is close to an inch wide (to avoid the tissue damage caused by narrower widths).

I usually carry the C-A-T ("combat application tourniquet") brand in my own kits, but there are lots to choose from. Just be aware that quality matters, and if you are going to carry a tourniquet, it is not an item to skimp on.

WASHES AND SANITIZERS

ALCOHOL WIPES. Alcohol wipes are useful for cleaning areas around wounds, as well as for cleaning and even disinfecting tools like tweezers, eyewash cups, forceps, and more. (Note: Putting alcohol into a wound itself is generally contraindicated because it causes cellular and tissue damage.)

WOUND WASH. Wound wash can be sterile saline solution, nonsterile but clean saline solution (make your own by mixing 1 teaspoon of salt into a quart of water), or just clean water. (Water that is clean enough to drink is clean enough for washing wounds.)

You'll also need a container that can dispense the solution with enough force to irrigate a wound. One option is a commercial wound wash solution in a dispenser—convenient but heavy. A water bottle with a nozzle would work, as would popping a hole in the lid of a single-use plastic water bottle. A syringe (30 or 40 cc, or cubic centimeters) is usually my choice; it makes a very good irrigation tool, can be used for many other

purposes, and is much lighter than premade solution packaged in a dispenser.

POVIDONE-IODINE. Iodine is an antiseptic agent that can be used to clean around wounds, to irrigate wounds, and even in dressings on infected wounds. But there are many forms of iodine, including iodine topical solution, Lugol's solution, iodine tincture, and povidone-iodine (Betadine).

I prefer to use povidone-iodine, which is an iodophor—that is, iodine bound with a carrier or solubilizing agent. The binding agent slows the release of iodine into wound tissue and makes it much safer for use than pure elemental iodine. Iodine (including povidone-iodine) can be used for water purification as well, making it a multipurpose item for your first-aid kit. (Note: Iodine in any form is contraindicated or at least used with caution for people with iodine sensitivity or a thyroid disorder, as well as for pregnant or nursing women.)

TOOLS

LIGHT. Some form of portable light is vital for any first-aid kit. A headlamp is ideal, but a small flashlight that you can hold in your mouth will do. The light needs to be functional when wet (imagine using it outside in the middle of the night in pouring rain). Having signaling capabilities with flashing lights (red and/or white) is also useful.

FINE-POINT METAL TWEEZERS. Tweezers are useful for so many different things that it is difficult to imagine a first-aid

kit without them. In addition to removing small splinters, cactus needles, and other irritating environmental hazards, they are handy for cleaning debris from a wound and for tick removal.

I prefer tweezers that have a sharp, fine point for precision (such as tweezers for electronics work); the flat edge can be used if the point isn't necessary. Cheap tweezers, like the kind that fold into a Swiss Army knife, are usually not much help. Small forceps can be useful as tweezers but don't have the fine points that are sometimes necessary.

FINGERNAIL CLIPPERS. Fingernail clippers help with issues like torn nails, ingrown nails, and clipping anything that scissors are too large to reach.

METAL BANDAGE SCISSORS. Bandage scissors come in different sizes and qualities. Ideally, you want ones that are large and durable enough to cut through thick clothing (think denim or even leather). Five-inch bandage scissors are about the minimum size to stand up to that kind of force, and 7-inch scissors are even better.

METAL FORCEPS. Forceps, sometimes called hemostats, allow us to reach and work with things that we can't easily handle with our fingers. We might use them, for example, to manipulate tissue or debris in a wound, to safely remove splinters, fishhooks, and other minor impalements, and for a variety of other medical tasks.

SCALPEL. Scalpels are necessary for cutting through tissue. They come in different types and sizes. I prefer #11 scalpels

because they have a very sharp point. You can save space in your kit by leaving out the scalpel handle; once you have removed the blade from its packaging, you can simply fold the opened packaging around the base of the blade to create a handle that works fine.

HYPODERMIC NEEDLE. A sharp needle is useful for relieving fluid-filled abscesses and blisters. It's also helpful for removing debris from a wound such as road rash; in fact, a needle sometimes works better than tweezers, forceps, or a scalpel for this type of work. While a sewing needle might work, a short (1- to 1½-inch) 18-gauge hypodermic needle is ideal.

IRRIGATION SYRINGE. As noted in the discussion of wound wash (see here), an irrigation syringe allows you to apply water with pressure to irrigate wounds, eyes, abrasions, and other injuries that need flushing out. A capacity of 30 or 40 cubic centimeters is ideal.

NITRILE GLOVES. Gloves are your best form of protection against the transmission of disease and should be in every first-aid kit. Nitrile gloves are a good choice; latex gloves may cause an allergic reaction in some people, and vinyl gloves may not protect you from smaller microorganisms. You should practice putting on and taking off gloves safely (aseptically—that is, without touching the outsides), as well as working with tape, bandages, and so on while wearing gloves.

MOUTH-TO-MOUTH BARRIER. Packing a small, inexpensive mouth-to-mouth barrier means you don't have to make the decision of whether you are willing to put yourself at risk by

performing mouth-to-mouth resuscitation on a stranger. While you're unlikely to use CPR in a wilderness situation (or at least you're unlikely to save a life doing so because of your distance from higher care), there are situations where mouth-to-mouth could be required to save a life, such as rescue breathing for a drowning victim.

SMALL MAGNIFYING GLASS. You must be able to see an injury or medical issue in order to be able to work on it. Magnification—whether a handheld magnifying glass, a hands-free magnifier on a head strap, or simply a pair of reading glasses—is very useful in a first-aid kit. A Fresnel lens, readily available from camping supply stores, is about the size of a business card. It can serve as a magnifier and also functions as a very effective fire starter, even in partial cloud cover.

COTTON SWABS. Cotton swabs, often called by the brand name Q-tips, can be used to apply a tincture, salve, or other substance to a small area on the body. They can also be helpful in rolling back (inverting) the upper eyelid in order to examine problems with the eye or eyelid.

DENTAL FLOSS. Dental floss combined with chew sticks (twigs from certain plants that are chewed to clean the teeth) is arguably better care for your teeth than a toothbrush alone. And if you're going to be out in the bush for a prolonged period, dental hygiene is imperative. Additionally, dental floss is cordage that has multiple other uses.

CASUALTY/EMERGENCY BLANKET. An emergency blanket is crucial to help prevent or deal with hypothermia. It can also be

used for padding, used to tie a pelvic splint, cut and used as a sling, or used to help create shelter. The quality of emergency blankets ranges from minimally useful wallet-size fold-up versions all the way to much thicker (but more bulky) ones that can also function as a shelter or even as a carrier for a small person.

NOTEBOOK. It is imperative that you take notes when working with a patient. Some of the most critical items to note can include vital signs, any medications the patient has taken, allergies the patient may have, contact information for the patient's family, injuries you've identified, when the patient was found, any treatments you've administered, the time of those treatments, and your evacuation plan (i.e., how you plan to move the patient to higher care, if you are in the field). Either spend the extra money for a waterproof notebook or make sure to pack it in a ziplock or other waterproof covering. Pack a pen or pencil, too!

REMEDIES (INTERNAL AND EXTERNAL)

ACTIVATED CHARCOAL. Activated charcoal has a number of uses. Internally, it can be used for gastrointestinal distress ranging from food poisoning to bacterial or even viral gastroenteritis, poisoning (e.g., from eating a toxic plant), diarrhea, and more. Externally, it is useful as a plaster to clean

out infected open wounds. I like to pack at least 4 ounces of activated charcoal powder in my first-aid kits. Charcoal capsules are less messy for internal use but must be pulled apart for external use. Look for USP (United States Pharmacopeia) food-grade charcoal; it is the best quality. (For more information on activated charcoal, see here.)

HONEY. Honey can be used for a quick hit of glucose for energy but in a first-aid kit, it is more important for its antimicrobial healing qualities. It is especially useful on wounds and burns. Packing honey into a first-aid kit can be messy, but single-serving honey packets made specifically for first-aid kits make it easy. I prefer manuka grade 12+ honey (the grading refers to its efficacy as an antibacterial agent), but any raw honey will perform well. (For more information on honey, see here.)

BURN TREATMENT GEL. As an alternative to honey, burn gels are very useful for minor burns and blisters. You can pack a commercial version, like Burn Jel, or you can use natural ones like the gel scraped from prickly pear pads or aloe leaves (whether used fresh or dried and reconstituted in the field).

BENTONITE CLAY. Bentonite clay provides excellent topical relief for the pain of insect bites, wasp or bee stings, scorpion stings, and irritation from poison oak or ivy, thistles, and nettles. Consider packing at least a few ounces of it. To apply, just mix the powdered clay with water to make a paste. (For more information on bentonite clay, see here.)

TINCTURE OF BENZOIN. Tincture of benzoin has a multitude of uses. In a field first-aid kit, it is probably most useful as an

organic glue to help hold tape, small bandages, and moleskin on the skin even in wet conditions. As it dries, it serves as a “second skin” that helps protect sensitive hot spots and blisters. It can also be used orally for canker sores.

TREATING BLISTERS

Foot blisters can be painful, particularly if you have to keep moving. The constant rubbing of your shoe against a blister can open it up and leave it vulnerable to further tissue damage and infection. When I was in the military, we would often put a moleskin “doughnut” (a piece of moleskin with a hole cut in the center) over a blister to protect and relieve pressure on it while a person was walking. We used tincture of benzoin as an organic glue to hold the moleskin in place, even under the most adverse conditions.

We also used tincture of benzoin to paint over the top of a “hot spot” where a blister was starting to form. The benzoin would thicken and harden, turning into a protective bandage.

If you don’t have moleskin available, any material that can prevent direct friction between the shoe and the skin will work to prevent or exacerbate blistering. Medical tape, athletic tape, and even duct tape are workable substitutes as long as they stay attached to the skin (which can be greatly facilitated by tincture of benzoin).

On the treatment of isolated blisters (such as on the foot), it is important not to pop the blister from the top. To relieve the pressure—at least temporarily—puncture the blister from the side, preferably by inserting a sterile needle under the nonblistered skin and into the blister area from outside. This helps keep the skin on top of the blister intact and able to function as a protective barrier for as long as possible.

OVER-THE-COUNTER PAIN-RELIEF MEDICATION. Although we can obtain pain relief from herbs, sometimes over-the-counter medication is faster acting than herbal formulas. (And sometimes you may be working with strangers who want nothing to do with herbs.) Common choices are aspirin, acetaminophen, naproxen sodium, and ibuprofen. Each have their strengths, multipurpose uses (for instance, aspirin can also help alleviate or prevent cardiovascular events), and contraindications.

ANTIBIOTIC OINTMENT. Antibiotic ointment can be useful to prevent infection in wounds. Ophthalmic ointment (usually available by prescription—check with your health care provider) can be especially helpful; it is safe to use in the eye in the case of a bacterial eye infection but can also be used anywhere else on the body to combat infection. Commercial antibiotic ointment is useful in your first-aid kit for the same reason that over-the-counter pain relief is: You can’t always assume that someone is going to be comfortable using an

herbal product and you may not want to use an herbal product with someone you don't know.

LIP BALM AND/OR ANTI-CHAFING GEL. I prefer to use herbal salves rather than commercial lip balms (see instructions on making a salve). However, almost any lip balm will be useful to help keep lips from becoming dry and cracked. Chafing becomes an issue when you're doing a lot of walking, and it can be a showstopper if the skin irritation becomes severely painful or even infected. Again, a skin-repair salve formula would be my first choice, but anything that provides some lubrication and protection to the chafed areas will be helpful. Petroleum jelly will work, as will any kind of thicker, viscous cream. Avoid antichafing gels with alcohol and/or scent additives, as they can irritate the chafed area more.

REHYDRATION/ELECTROLYTE POWDER MIX. Rehydration and electrolyte mixes can help restore health in people suffering from heat and exertional injuries (such as heat cramps or heat exhaustion). They can also be given as preventive medicine to people who are prone to these types of injuries. Many of the powdered mixes have a high amount of sugar, so look for brands that have little to no refined sugar while offering both electrolytes and some vitamins.

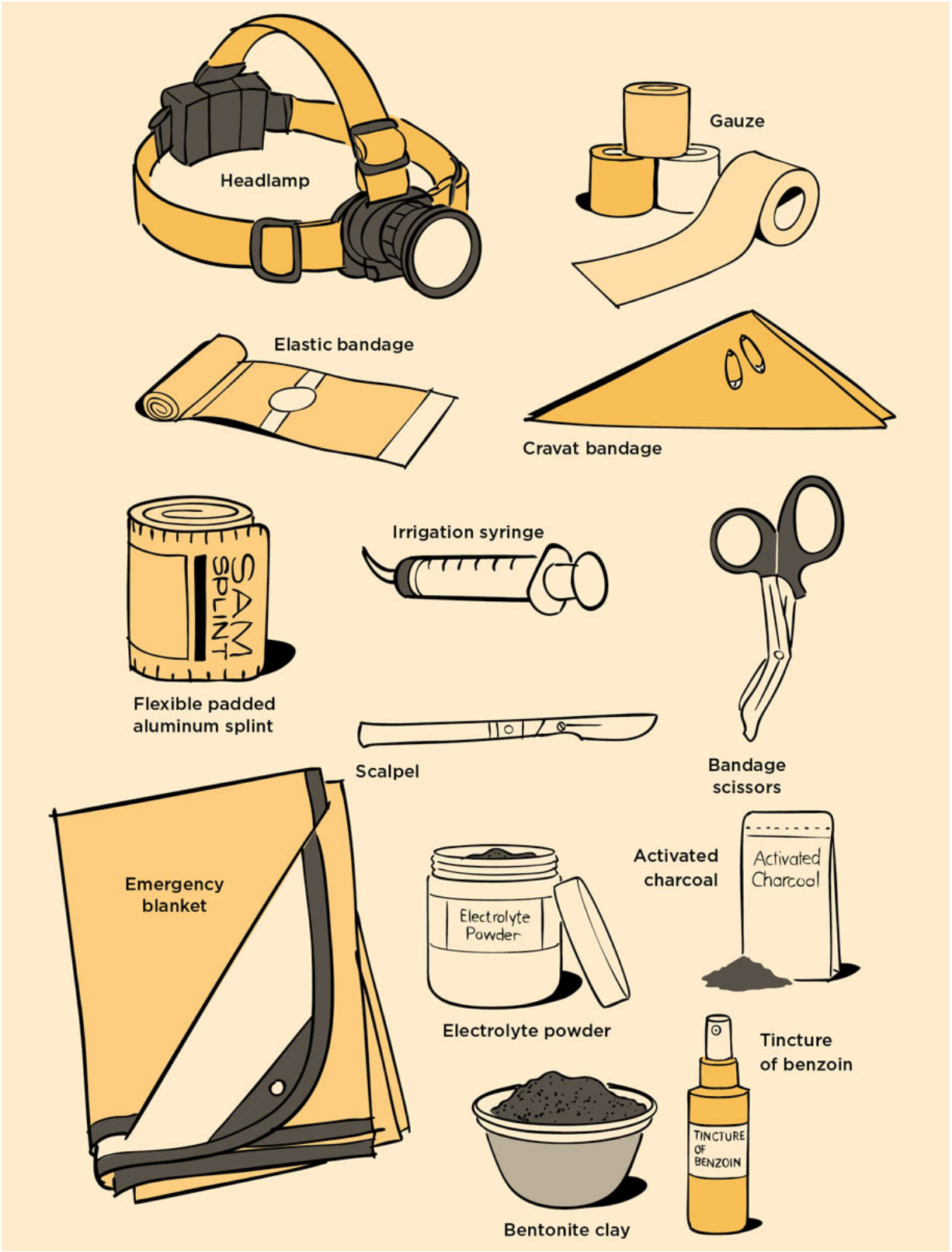
PACKING A FIRST-AID KIT

Using the materials described in this chapter, you can pack a first-aid kit based on your particular needs. You might want a small first-aid kit for an overnight camping trip, or a larger kit to meet the needs of your family at home, all the way up to a well-stocked pack meant to serve a clinic. What you pack in your kit will depend on its intended use. For example, a small kit that would fit easily into the outside pocket of a day pack for a daytime hike in the woods might look like this:

- ❑ Athletic tape and/or duct tape
- ❑ Kinesiology tape
- ❑ Adhesive wound closure strips
- ❑ Band-Aids: small strips to large (4 × 4-inch) sizes
- ❑ Moleskin
- ❑ Gauze: 4 × 4-inch and 2 × 2-inch nonstick pads and/or a small gauze roll
- ❑ Elastic wrap: a 2- or 3-inch-wide roll
- ❑ Occlusive dressing/chest seal
- ❑ Tourniquet
- ❑ Sanitizer towelettes and/or alcohol wipes
- ❑ Small bottle of wound wash (if there's room) or a 20-gauge syringe (which you can use to wash wounds with clean drinking water)

- [ ] Tweezers and/or small forceps
- [ ] Small bandage scissors
- [ ] At least one 18-gauge needle or sewing needle
- [ ] Nitrile gloves
- [ ] Aspirin
- [ ] Antibiotic ointment
- [ ] Small bottle of sunscreen

A FIRST-AID KIT


Headlamp
Gauze
Elastic bandage
Cravat bandage
SAM SPLINT
Flexible padded aluminum splint
Irrigation syringe
Scalpel
Bandage scissors
Emergency blanket
Electrolyte Powder
Electrolyte powder
Activated charcoal
Activated Charcoal
Tincture of benzoin
TINCTURE OF BENZOIN
Bentonite clay

ABOVE: *A first-aid kit for a day hike can be smaller than one for a backwoods expedition.*

PERSONALIZING YOUR KIT

A first-aid kit should be tailored to your specific needs. In addition to all the general items you'd want in a first-aid kit so that you can respond to a variety of situations, consider items specific to medical problems that you might anticipate for your personal scenario. These might include medications for yourself or a loved one with a chronic illness, antidiarrheal or laxative medications, cold and flu capsules, cough drops, and any other number of items (herbal or nonherbal) that you feel you might need and are comfortable using.

LONGER JOURNEY FIRST-AID KIT

What if you have the room and want to expand your first-aid kit or will be away for some time? Here are some more items to consider:

- ☐ Extra roll of athletic tape, duct tape, and/or medical tape

- [ ] Extra 4 × 4-inch gauze pads and/or a medium/large gauze roll
- [ ] Extra roll of 3-inch and at least one roll of 4-inch elastic wrap
- [ ] Self-adhesive vet wraps: small and medium rolls
- [ ] Compression dressing
- [ ] 2 cravat bandages
- [ ] SAM-style splint
- [ ] Headlamp or small flashlight with extra batteries
- [ ] Mouth-to-mouth barrier
- [ ] Activated charcoal (4 ounces)
- [ ] Aloe vera gel
- [ ] Lip balm or antichafing gel
- [ ] Rehydration/electrolyte powder mix
- [ ] Cough drops and/or cough syrup
- [ ] Cold and flu capsules
- [ ] Antidiarrheal medication
- [ ] Laxative medication

As you read through these lists, you may feel like they are missing something that you would want in your own kit. You might also realize that the lists include some useful items that you wouldn't have thought of. This is part of the process of building and using your own first-aid kit—or kits, if you have different ones for different circumstances.

CONTAINERS

A first-aid kit has to reflect appropriate limitations for space and weight. A kit for a day hike will generally be a lot smaller than a kit you keep in your car or at home. A kit for a 3-week backpacking excursion in which you are the most medically trained person in a group of a half dozen friends will be larger. When I am traveling alone, or if my wife and I are backpacking or doing a day hike, I usually carry a first-aid kit that fits into a MOLLE pouch about 8 inches long, 4 inches wide, and 3 inches deep. (MOLLE stands for "modular, lightweight, load-carrying equipment.") This is probably overkill, but it provides everything I'd need to treat minor trauma and bleeding as well as musculoskeletal injuries.

In the car, I keep a trifold toiletries bag stocked as a first-aid kit (these bags make excellent first-aid kits because they can lie flat or be hung up for easy access). This kit contains the basics that I feel might be needed in dealing with a car wreck, which

could include everything from minor lacerations and broken bones to life-threatening bleeding.

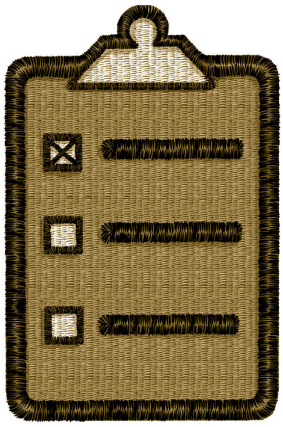
Kits that open and lie flat are far preferable to the types that are more like duffel bags. You don't want to have to pull out everything in your first-aid kit in order to access something critical. Before you know it, half your gear is on the ground getting dirty or wet or lost, and you're still groping around to find what you need. The better you can see everything, the easier it is to grab just what you need and the more competently you can work.

Having supplies in labeled subcontainers—smaller packs, boxes, or ziplock bags—will give you another level of organization. Store anything that would become damaged or unusable if wet in some kind of waterproof packaging.

ORGANIZE FOR EMERGENCIES

The most important aspect of any first-aid kit is being able to access life-saving items as quickly as possible. Designate a place in your first-aid kit specifically for the items you would use to deal with a life-threatening bleed (e.g., a tourniquet, compression bandage, and occlusive dressing) so that you can put your hands on them immediately.

CHAPTER 2
ASSESSMENT OF THE SITUATION



The world of medicine is extremely broad. You need to be able to treat injuries and illnesses, of course, but you also must be able to identify and differentiate injuries and illnesses in the first place. In addition to assessing relatively minor medical situations in order to render the proper aid, it is critical that you can recognize “red flag” medical conditions that require immediate higher medical care.

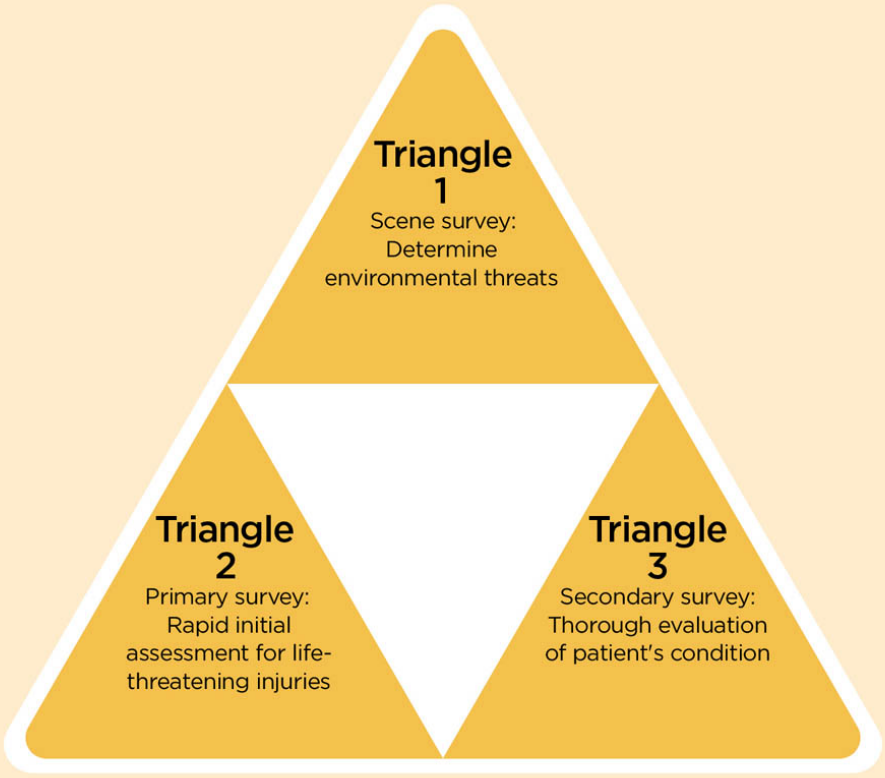
There are a number of methods for evaluating someone who has been injured. As long as you are treating life threats first and moving in an order that is efficient and allows you to treat the worst injuries first, I recommend that you use whichever system works best for you.

The classic ABC system (Airway, Breathing, Circulation) is useful, but I prefer what is known as the three-triangle method, which is both more comprehensive and easy to learn.

Here, each of the three triangles represents one of the three critical areas of assessment for a medic:

- Triangle 1: the scene survey, in which we determine whether there are any environmental threats to our own or the patient's safety
- Triangle 2: the primary survey, in which we quickly assess the patient for life-threatening injuries
- Triangle 3: the secondary survey, in which we slow down and thoroughly assess the patient for any non-life-threatening injuries

THE THREE-TRIANGLE METHOD


Triangle 1
Scene survey: Determine environmental threats
Triangle 2
Primary survey: Rapid initial assessment for life-threatening injuries
Triangle 3
Secondary survey: Thorough evaluation of patient's condition

GET TRAINING!

If you have no training in first aid or emergency medicine, I highly recommend that you take a wilderness first-aid certification course, which will teach you the basics of assessment as well as the orthodox first-aid skills discussed in Chapter 3. It's important that you become comfortable employing these skills in the field, on your

own, without immediate access to professional medical help. That mindset and training might come in handy someday, whether you are in your own home, on a city block, or in the middle of the woods.

TRIANGLE 1: SCENE SURVEY

In this first triangle, we assess a factor that is often overlooked but has critical importance in the field: the overall scene. What is the big picture—the 10,000-foot view of the situation? We might not consider all the dynamics of the scene in the case of a minor injury incurred in an everyday situation, but the scene becomes much more relevant when we are confronted by a major first-aid situation.

SIDE 1: SCENE SAFETY

The first side of this triangle is assessing the safety of the scene. Let's consider a car accident as an example. Is the car leaking gas? Is it on fire? Is it in a precarious position? Is there oncoming traffic? Are there bystanders who could be injured by any of these environmental factors?

There's a mnemonic to help you run through this step: PPPP, or the Four Ps (Personal, Partner, Public, and Patient), which should be considered in that order.

PERSONAL. Is there a great risk to myself that must be mitigated or resolved before I can render aid? (For example, a downed, possibly live electrical line between me and the patient.)

PARTNER. Is there a risk to anyone who is helping me that must be mitigated or resolved before I can render aid? (For example, a team member who got trapped in a flooded river trying to rescue a patient.)

PUBLIC. Is there a risk to bystanders that needs to be resolved or mitigated before I can render aid? (For example, a forest fire that requires everyone present to immediately evacuate the area.)

PATIENT. Is there a danger to the patient (outside of injuries) that needs to be resolved before I can render aid? (For example, a loaded firearm lying next to the patient.)

SIDE 2: MECHANISM OF INJURY / SIDE 3: NUMBER OF PATIENTS

The next two sides of the triangle we can consider almost simultaneously: What is the mechanism of injury, and how many people are injured? In the example of the car accident, it may be obvious that there is trauma involved; however, there may be other things going on, too. Perhaps the driver had a stroke or a heart attack and lost control of the car. Maybe the car was speeding a laboring woman to the hospital. In other

words, the trauma caused by the car accident may not be the only medical issue that needs attention.

In addition to determining the number of people who are injured, look to see if there are people who want to help. The usual rule of thumb in a medical emergency is: If nobody is in charge, you take charge. If someone is already in charge, introduce yourself quickly, describe your level of training, and ask how you can help (for example, “Hi, my name is Sam and I have some wilderness first-aid experience. How can I be of help here?”). What kind of first-aid gear do you have with you? Do you or anyone else on the scene have a cell phone? If cellular service is available, this is usually the point where we should call for help or have someone else call for help while we work.

This would also be the time when we pull the gloves out of our first-aid kit and put them on for our own personal safety, especially if we are going to be working around body fluids.

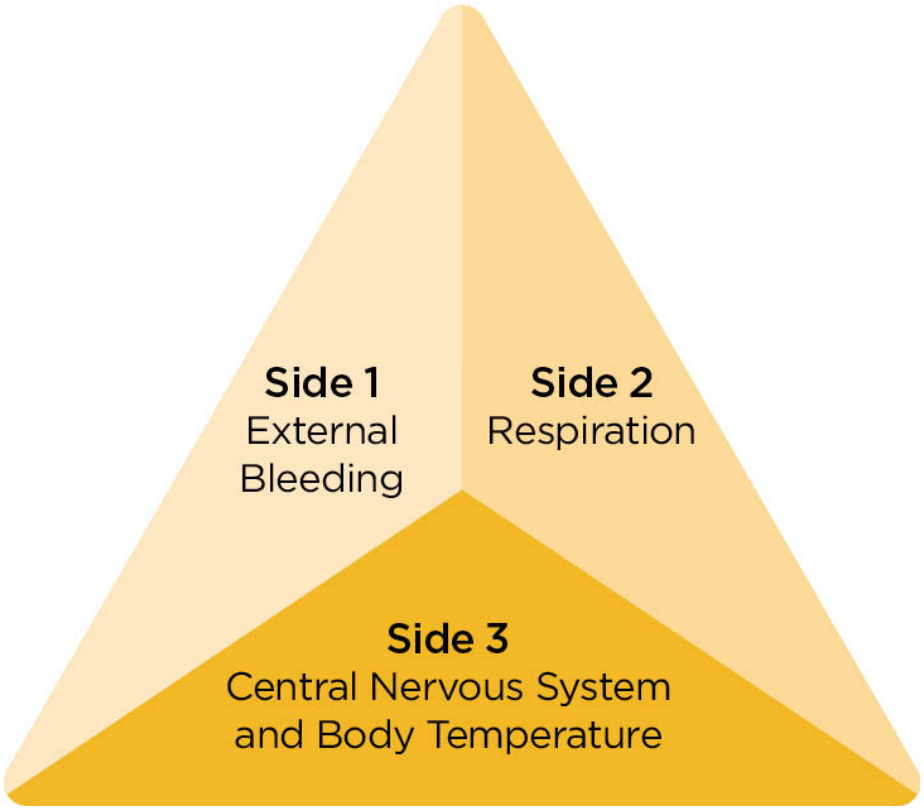
WEIGHING THE RISK

Probably very few accident scenes are ever 100 percent safe. If they were, they wouldn’t be accident scenes. However, the question to ask ourselves is: If we run in to help, how much risk will we ourselves face? The worst thing we can do is create more injured victims, especially if those victims are people (such as ourselves) who have some training and want to help.

TRIANGLE 2: PRIMARY SURVEY

Moving to the second triangle, we can now address any life-threatening injuries. Generally, these will involve bleeding and respiratory problems, the first two sides of the triangle. The third side has us focus on issues that must be prioritized even though they are not immediately life-threatening: potential injury to the central nervous system (CNS) and the patient's body temperature. Ideally, we will not move a patient until we have taken care of all of these issues, though it is possible that we may need to quickly move them to keep them out of harm's way.

TRIANGLE 2
PRIMARY SURVEY



SIDE 1: EXTERNAL BLEEDING

External bleeding is a prominent (and usually visible) sign of injury, and it is important to assess quickly whether it is arterial or venous.

Arterial bleeding is bright red, usually involves a lot of blood, and may squirt or pulse in rhythm with the heartbeat. It must be stopped as soon as possible to avoid major loss of blood. The

most immediate response to a life-threatening bleed should always be to apply direct pressure, followed by either a tourniquet or a compression bandage (see here).

Venous bleeding is a darker red and is usually not considered immediately life-threatening. A venous bleed can be treated in the secondary survey (triangle 3) after we have determined that our patient has no immediately life-threatening injuries.

Assessing bleeding may mean having to expose the wound by removing or cutting away any clothing that obstructs our view. For this reason, it's wise to have bandage scissors very accessible in our first-aid kit. In a wilderness situation, if we can take the time, it's a good idea to cut clothing along seams so that it can be repaired more easily if needed for protection from the elements. However, the main priority is to expose the injury enough that we can easily see what is going on.

SIDE 2: RESPIRATION

It is important not to become sidetracked by bleeding to the extent that we are not evaluating the patient's airway and breathing. Are they able to inhale and exhale? Are they talking or even screaming in pain? Talking, yelling, or screaming is a good sign that the airway is probably okay.

Is there any visible trauma to the back or chest? Are both sides of the chest rising and falling as the patient inhales and exhales? If the chest is not rising and falling, then we must immediately check the airway.

If the patient is unresponsive and not breathing, it is necessary to reposition the airway. If you have taken a CPR class, then you have learned about the "head tilt, jaw lift" method of repositioning the airway for someone lying on their back; this can be effective for an unresponsive patient whose tongue is relaxed and partially blocking the flow of air.

Another method is to roll the patient carefully onto their side; however, if the patient has any injury to the cervical spine (the part of the spine in the neck), this type of repositioning could potentially exacerbate that damage. There are alternatives for opening the airway if there is more than one rescuer and everyone is trained in first aid. However, life over limb is the order we must follow, particularly if we are alone with an injured person. Without an airway, the patient has only a few minutes to live, so breathing must take precedence.

One of the most obvious injuries that will present with a breathing issue is a gunshot wound to the chest or back. A gunshot wound necessitates looking as quickly as possible for an exit (or entrance) wound. In the case of a gunshot wound to the chest, we will need to apply an occlusive dressing (see details) to both the entrance and exit wounds (assuming there is an exit wound).

SIDE 3: CENTRAL NERVOUS SYSTEM AND BODY TEMPERATURE

Once we have addressed critical issues like stopping an arterial bleed or opening an airway, we can turn to other issues that are

very high on the priority list: determining our patient's level of consciousness, identifying any potential head and spine injuries, and taking immediate steps to counteract extreme changes in body temperature.

Level of Consciousness (LOC)

To assess a patient's level of consciousness—that is, how alert and oriented they are—we can use the mnemonic AVPU:

A — Alert

V — Verbal

P — Pain

U — Unresponsive

ALERT. To begin, we simply talk to the patient. If they are alert and respond, we can determine more detail about their LOC with an assessment that is sometimes called "LOC x 4," based on a patient's cognizance of four factors:

- Who they are (their name)
- Where they are
- When they are (what day of the week is it?)
- What happened (how did they get injured?)

There are many other questions to ask, but the main idea is to establish how alert and oriented the patient is while also trying

to set them at ease. This gives us a baseline for determining whether the patient is improving or getting worse as we continue treatment. For instance, if someone with a suspected head injury is at first lucid and exhibiting LOC x 4, but 2 hours later that person is at LOC x 2 and vomiting, their deterioration would strongly confirm the likelihood of head injury.

VERBAL. If the patient is not alert but responds to repeated spoken commands or questions (such as moaning incoherently, opening their eyes, or trying to respond to questions), then we categorize them as verbal, the "V" in the AVPU scale.

PAIN. If the patient does not respond to verbal stimulus but reacts to touch—they move, moan, or otherwise respond when being palpated for an injury or having their thumbnail or earlobe squeezed—then we say they are responsive to painful stimulus, which is the "P" in the AVPU scale.

UNRESPONSIVE. If there is no response of any type, the patient is unresponsive on the AVPU scale.

Head and Spine Injuries

We will evaluate the severity of any possible head injury during the secondary survey (triangle 3), but the most immediate assessment is to check for signs of a skull fracture, such as bruising around the skull, pink fluid (cerebral spinal fluid and blood) leaking out of the ears, scalp lacerations (not a definitive sign of a skull fracture, but it should make us check

carefully for other signs or symptoms), nausea and vomiting, and, again, level of consciousness.

While a spinal injury may or may not be life-threatening, it can certainly be limb-threatening. We assess via two factors: the mechanism of injury and a quick physical exam of the neck, or cervical spine (C-spine), including palpation and visualization, if that is possible. When the mechanism of injury involves a high risk of spine damage, such as a fall from above 8 feet, a diving accident, or a car wreck involving whiplash-type injuries, we automatically suspect a C-spine injury, which means that we want to keep the patient's head and neck aligned while we are working.

In these cases, the C-spine is immediately manually stabilized by someone on the rescue who holds the patient's head in alignment while other people work on other injuries. If we are working on our own, we might have to simply ask the patient not to move their head while we assess them and treat any injuries. (See also Clearing the Spine.)

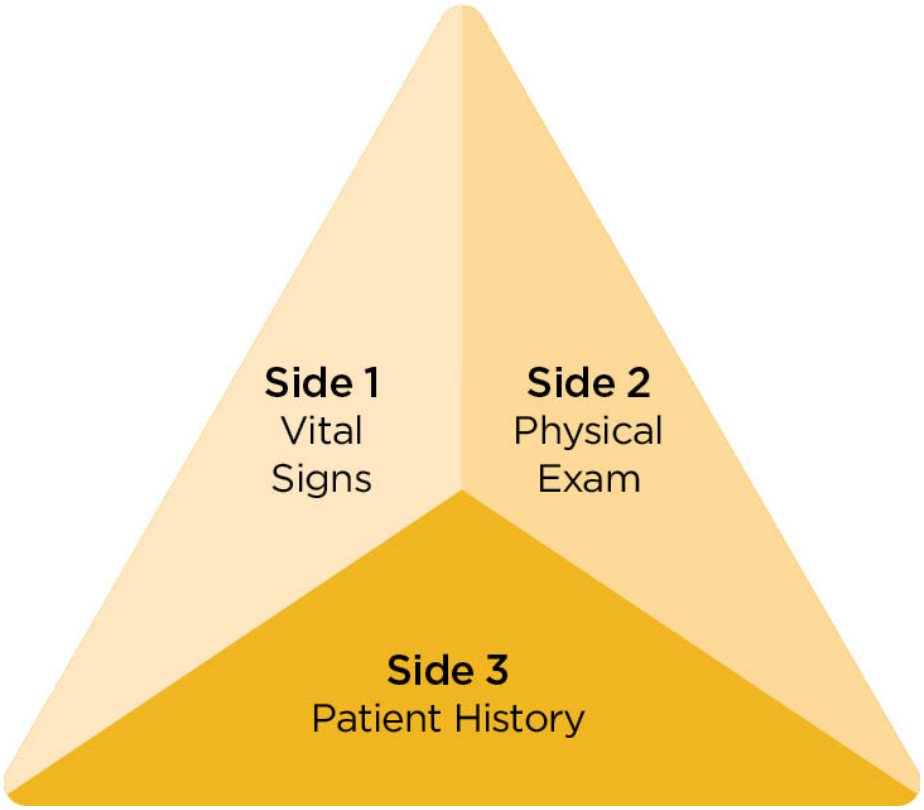
Body Temperature

We may need to cool a hyperthermic patient (see here) or warm a hypothermic one (see here). Either condition can worsen quickly and become life-threatening.

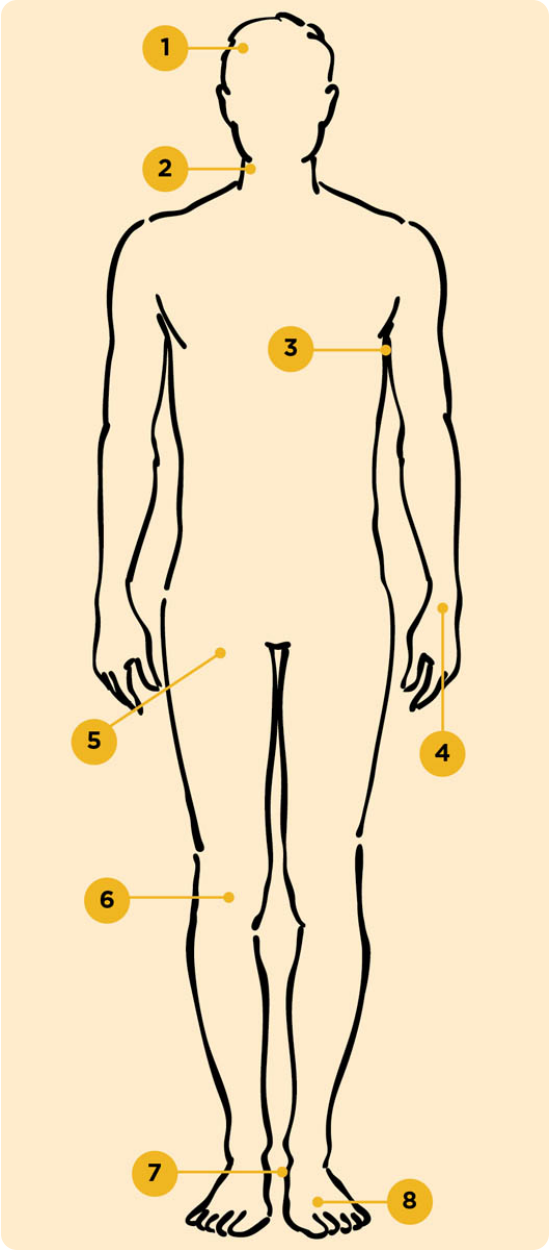
TRIANGLE 3: SECONDARY SURVEY

Once we have taken care of all life-threatening injuries through the primary survey, we can start back over with our secondary survey, which is a slower, more detailed assessment of the patient to identify all injuries and possible medical issues. The three legs of this triangle involve vital signs, a physical exam, and a patient history.

TRIANGLE 3
SECONDARY SURVEY



PULSE POINTS



1. *Temporal*
2. *Carotid*
3. *Brachial (inside of arm between bicep and tricep)*
4. *Radial*

4. *Radial*
5. *Femoral*
6. *Popliteal (back of knee)*
7. *Posterior tibia*
8. *Dorsal*

SIDE 1: VITAL SIGNS

The secondary survey starts with taking a set of vital signs. In the field, these include the patient's level of consciousness, which you've already determined (see here), as well as the following:

- Pulse (heart rate)
- Respiratory rate
- Blood pressure (BP)
- Skin temperature, color, and moisture

Vital signs help establish an even better baseline so that we can determine how our patient is doing as time passes. The sooner we can make a note of these vital signs, the sooner we will have a baseline to compare against if our patient starts to get worse or better. This should make obvious the need for something to record information with, which is why a pencil and notebook are important tools for our first-aid kit.

Carrying a BP cuff is generally not practical for a small first-aid kit, but for a situation where you are a team medic (e.g., an expedition) or for a car kit, it is a good, and sometimes even necessary, item to have. Without a BP cuff, the presence of a pulse in different locations of the body can tell us something about the strength of the systolic BP, because it takes more pressure to push blood to the extremities of the body. In other words, if you can feel a carotid pulse but no radial pulse, then the systolic BP is dangerously low. Conversely, if you can feel a strong dorsal pulse on the foot, that is a much more positive sign in regards to the systolic BP of your patient.

Learning to take vital signs is not difficult, but it needs to be practiced. I recommend learning through a training course (like a wilderness first-aid course); hands-on practice with an experienced teacher is the best way to learn.

Normal Vital Sign Ranges	
Temperature	97.8–99.1°F
Pulse	60–100 beats/minute
Respiration	12–18 breaths/minute

SIDE 2: PHYSICAL EXAM

After checking the patient for life-threatening injuries, it is time for a more detailed head-to-toe assessment. During this secondary survey, we are going to bandage, splint, or otherwise address any non-life-threatening injuries while also double-checking any dressings, bandages, or tourniquets we may have applied earlier to make sure it is still doing what we meant it to do (for example, stopping a life-threatening bleed).

Let's use the example of someone with a broken forearm. What are the signs and symptoms of injury? An easy mnemonic to help you remember what to look for first is DOTS:

D — Deformities

O — Open wounds

T — Tenderness

S — Swelling

Checking first for deformities, open wounds, tenderness, and swelling gives you the bigger picture. In this case, you notice a deformity in the arm. For an injury on an extremity, or anywhere blood flow distal (away from the torso) to the injury may have been impacted, another mnemonic is CSM:

C — Circulation (blood flow)

S — Sensation (nerves)

M — Motor (connective and muscle tissue)

How can we know if there are other issues stemming from that fracture besides the bone break itself? Is the broken bone interfering with blood flow to the rest of the arm and hand? Did the injury also damage any nerve tissue? Did the injury also damage any soft tissue (muscle and connective tissue)?

CIRCULATION. First take the pulse that is distal to that fracture, which in this case would be the radial pulse, or the pulse at the wrist. If you are unable to ascertain the pulse, you can also determine circulation to the extremities by evaluating capillary refill at the tips of the toes or fingers. This is generally done by pressing down on the nail (or the area around the nail, if the nails are painted) and observing how long it takes for the blanching to return to the normal pink color. This usually varies from less than a second to about 3 seconds. If it takes longer than 3 or 4 seconds, there may be a circulation issue.

SENSATION. Next, evaluate any nerve damage in the injured arm by asking whether the patient has any numbness or tingling in their hand or fingers.

MOTOR. Finally, ask the patient to move their hand and fingers to help determine the extent of soft tissue damage in the arm.

These three physiological functions are interrelated, so there's not necessarily a clean line between each test and exactly what it is testing. However, doing a CSM check is very important both before and after treating a non-life-threatening injury on an extremity. This allows us to both check for damage that might affect the intended treatment,

and to ensure we didn't create additional damage (e.g., a too-tight bandage cutting off circulation).

INTERNAL BLEEDING

During a physical exam, we might discover the possibility of internal bleeding. If the patient's injuries would allow us to pack gauze or some other type of material into the body, we could, with sufficient training and experience, do that. However, from the perspective of a first-aid medic, we can't usually do anything about internal bleeding aside from immediate evacuation of the patient to higher care.

SIDE 3: PATIENT HISTORY

The final aspect of the secondary survey is getting the patient's medical history, including details on the mechanism of injury, for which we can use the SAMPLE mnemonic:

S — Signs and symptoms

A — Allergies

M — Medications

P — Previous illness or injury

L — Last known intake of food or water; last known urination, defecation, nausea, or vomiting; also (if

appropriate) last known menstrual period

E — Events leading up to the illness or injury

Bear in mind that the three-triangle method assumes that we need a full set of information to respond to a first-aid situation. That may not actually be the case. If a person falls and injures their wrist, there is no need for a primary survey or a full physical exam, or even a set of vitals (although I would still take them, just to be careful). You can simply examine the wrist and then bandage and wrap or splint it accordingly.

Every situation is different and there is rarely only one right approach. However, using mnemonics and patterns of assessment helps us work efficiently and set priorities. There is a saying in emergency medicine: "Think fast, then think again." We need to think and act quickly, but we also need to constantly reassess our actions in order to provide the best care.

ADVANCED FIELDWORK: CLEARING THE SPINE

In wilderness medicine, we talk about *protecting* the spine, rather than immobilizing it, in the event of a potential spinal injury. If higher care is not immediately available, actually immobilizing someone on a backboard or in a cervical collar for hours or days would cause them physical trauma; it's not advisable or helpful.

There are some physical assessments you can run in the field to clear the spine — that is, to determine that the spine has not been injured and does not need protection. However, do not attempt to clear the spine if the patient is under the influence of any kind of pain-relieving medication, alcohol, recreational drug, or other substance that would reduce their ability to feel pain, or if the patient is distracted by emotional events (such as the death or injury of a loved one) that would alter their perception of pain.

One Common Method for Clearing the Spine

1. Ensure that the patient is comfortable, preferably lying on their back.
2. Have someone maintain manual C-spine control by holding the patient's head with two hands. Palpate down the back of the neck from the base of the skull (C1) to the start of the thoracic vertebra (C7) in order to feel for swelling or crackling (crepitus). Ask the patient if they feel any symptoms—pain, tingling, or hot or cold flashes—anywhere in their body (especially the extremities) while you are doing this.
3. If the patient feels no symptoms during palpation, remove the C-spine control and ask them to turn their head slowly, 45 degrees to their right or left, but to stop if they feel any pain, tingling, or hot or

cold flashes. Then have them return their head to a neutral position.

4. If the patient feels no symptoms during the first 45-degree rotation, ask them to rotate their head 45 degrees to the other side, while monitoring for the same pain, tingling, or hot or cold flashes. Then have them return their head to a neutral position.

5. If the patient feels no symptoms during the second rotation, ask them to flex their chin toward their chest slowly, but to stop if they feel any pain, tingling, or hot or cold flashes. Then have them return their head to a neutral position.

6. If the patient feels no symptoms during flexion, ask them to extend their neck by looking backward toward the top of their head, again stopping if they feel any pain, tingling, or hot or cold flashes. Then have them return their head to a neutral position.

7. If the patient feels no symptoms during extension, have them sit up. Stand behind them and place both of your hands on the top of their head. Press down very gently (1 to 2 pounds of axial pressure) and ask whether they feel any pain, tingling, or hot or cold flashes.

8. If the patient feels no symptoms, we can assume their spine is cleared, but advise them to move their spine slowly and carefully and monitor themselves

for any sign that their spine may be injured until they can be examined by higher medical care.

CHAPTER 3
BASIC SKILLS

While it may seem daunting, emergency medicine in the field is not complex. The most difficult part for most people lies in prioritizing so that they take care of the most critical issues first. There may never be one perfect approach to any given trauma situation—especially one involving multiple body systems—but we have a high probability of success as long as we think quickly, prioritize life-threating factors, and constantly reassess what we are doing, adjusting our actions as necessary.

While this chapter is not a substitute for hands-on training and practice (and remember, these skills are perishable—you must practice if you want to maintain them), it does provide an overview and context for you to build upon.

STOPPING BLEEDING

If the bleeding is life-threatening (see here for a discussion of arterial versus venous bleeding), the first step is to apply direct pressure on or above the wound. If the wound is on an extremity, it may be necessary to use a tourniquet or pressure dressing.

ABOVE: *Applying direct pressure is the first step in stopping bleeding.*

DIRECT PRESSURE

For any wound with severe bleeding, immediately apply direct pressure on or above the wound. Your patient may be able to do this while you gather what you need to dress and bandage the wound.

Depending on the damage and whether or not the wound involves an artery (remember, arterial bleeding is bright red and may squirt or pulse in rhythm with the heartbeat), direct pressure may be more effective above the wound rather than directly on it. ("Above," in this context, is a relative term meaning proximal, or between the wound and the heart.) Arteries are encased in smooth muscle that contracts upon injury. This may pull the end of the artery proximally (toward the torso) some distance. If that's the case, pressure on the wound itself will miss the end of the contracted artery; the pressure must be applied just above the wound to compress the artery. Pressure points can also be very effective, though using them requires learning some basic anatomy.

TOURNIQUETS VS. PRESSURE DRESSINGS

The primary difference between a tourniquet and a pressure dressing (a.k.a. compression bandage) is that a tourniquet will cut off all blood flow distal to (below) its location on an extremity, while a pressure dressing should ideally provide only enough pressure to stop the bleeding, without cutting off all circulation distal to it.

Once you apply a tourniquet, you have only a few hours before the limb will suffer tissue death due to lack of circulation, necessitating amputation. After 2 hours, the window has passed for converting a tourniquet to a pressure dressing (an advanced technique beyond the scope of this book). Limbs have been saved after as much as 8 hours after application of a tourniquet, but obviously, finding higher care is of the utmost concern.

In situations where higher care may be many hours or even days away, a pressure dressing is preferable to a tourniquet. A pressure dressing absolutely can stop an arterial bleed. In fact, if it is wrapped tightly enough, a pressure dressing can become a tourniquet, though that is not what we want.

After applying a tourniquet or pressure dressing, do a CSM check (see here). If you have applied the tourniquet correctly, there will be no pulse in the limb distal to it. With a pressure dressing, you should still feel a pulse and the extremity should not be going numb. But remember: With a life-threatening bleed, stop the bleeding first, then do a more thorough assessment.

For instructions on improvising a tourniquet, see here.

KNOW YOUR TECHNIQUES

When I started my training as a Special Forces medic in 1989, tourniquets were a tool of last resort due to the risk of limb loss. After years of wartime medicine in the Middle

East, however, tourniquets have risen in the ranks to become the first choice for treating arterial bleeds. Why?

First, a tourniquet can usually be applied more quickly, and depending on the type of tourniquet, it can be applied relatively easily with one hand, which is important in combat and/or for self-application.

Second, medics treating battlefield trauma, like those in urban emergency medicine, can expect to have their patient in surgical care within an hour or two, if not within minutes. Within this time frame, the limb can likely be saved in the operating room.

Finally, in a high-risk situation where there is no time to stop and expose the wound, a tourniquet can be successfully applied over the clothing.

In other words, when it comes to stopping a life-threatening bleed, you have to consider your environment. For an arterial bleed in a suburban area, 20 minutes from the nearest hospital, a tourniquet is undoubtedly a good choice. For the exact same arterial bleed in a post-disaster situation, possibly days from any kind of higher care, a compression bandage—or at least an understanding of how to convert a tourniquet to a pressure dressing—might be a better first choice. Learning how and when to use both tourniquets and pressure dressings is key.

SEALING WOUNDS: OCCLUSIVE DRESSINGS

An occlusive dressing is designed to provide an airtight, watertight seal around a chest-penetrating or major abdominal wound. It is mostly used in cases of a chest wound that may have created an opening into a lung, introducing the possibility of the lung collapsing. (For this reason, an occlusive dressing is sometimes called a chest-seal dressing.) A gunshot wound to the upper torso is a good example.

There are numerous brands of chest-seal products on the market that take up almost no room in your kit and are very easy to use. Practice with the brand you choose so that you know how to apply it in an emergency.

For instructions on improvising an occlusive dressing, see here.

THE BEAUTY OF BUDDY-SPLINTING

Buddy-splinting is the practice of taping or splinting an injured digit to an uninjured one for support. This works well for fingers and toes and can also be used to stabilize and support a broken or injured leg, hip, or pelvis for transporting a patient. For fingers and toes, tape the injured digit to the uninjured one next to it or on both sides of it. I prefer an elastic tape like vet wrap, but any type of

tape will work. If the fingers need to be functional, don't tape over the knuckles, leaving the joints free to flex.

For a leg, hip, or pelvis, pad between the legs well and tie them together with cravat bandages or some other soft type of fabric. Slide the ties under the curvature of the ankles and knees to avoid moving the legs as much as possible. Ideally, you want two ties above and two ties below the knee, spaced evenly. Do not tie over the knee or over the top of the injury.

You can also use elastic wrap, if it is possible to do so without picking up and moving the legs (and possibly causing pain or further injury) during the process.

IMMOBILIZATION: SPLINTS AND SLINGS

A broken or dislocated bone or joint can potentially move in ways it shouldn't while the patient is being transported. Additionally, any movement of that injury is going to cause a lot of pain for the patient. Immobilizing the injury prevents further damage and reduces the patient's pain.

SPLINTS

For a fractured bone, or for damage to a joint that is bad enough that we need to protect and immobilize that part of the body, we can apply a splint. A splint can be made out of soft material, such as a rolled-up towel or a piece of foam cut from a sleeping pad, but it is better to use something stiff (e.g., wood, several layers of cardboard, or a rolled-up magazine). Flexible aluminum is one of the best splinting materials; ready-made aluminum splints are lightweight and malleable and protect an injury.

For instructions on applying a splint, see here.

SLINGS

Slings are used to immobilize and support the upper arm, forearm, wrist, and hand. There are dozens of ways to create slings from clothing, strips of cloth, and many other materials. A cravat (triangular) bandage—which should be in any first-aid kit due to its incredible multipurpose capabilities—is easy to convert to a sling, and I think it's important for every aspiring medic to know how to do it.

For instructions on one common method of making a sling, see here.

TAPING TECHNIQUES FOR INJURIES

Musculoskeletal injuries like sprains and strains are common both at home and in the field, and with proper taping, you can support the injured tissue and prevent further damage while still allowing movement, flexion, and extension. I like to describe taping techniques as a way to create a sort of exoskeleton that supports from the outside when the structure inside the skin is injured.

THE RIGHT TAPE

The traditional choice is athletic tape. It doesn't stretch, sticks well to skin, and has a good torsion strength. In a pinch, we could also use other types of strong non-elastic tape, such as Durapore surgical tape, although it does not necessarily have the same torsion strength and can rip more easily with side-to-side movement.

Elastic wrap is not recommended; it will give us too much compression and not nearly as much structural support as we need. We could use duct tape in an emergency, although it is definitely not advisable to tape directly on the skin, especially for longer periods of time, as duct tape can be very irritating. However, in field situations where it may be necessary to temporarily tape on top of shoes or clothing, duct tape can be effective.

Athletic tape should ideally be 2 inches wide for adults. A 1½-inch width will work for adults as well, however, and is usually a more appropriate size for children. You can pull the tape off the roll as you go and tear or cut it when you need to, or you can cut the length you need before applying it. I find

that it is usually easier to apply tape directly off the roll and tear or cut it when I need to.

TAPING WITH K-TAPE

Another taping option is kinesiology tape, or k-tape, which is designed to provide support without limiting movement. In my opinion, it is best suited for injuries to structures that are not weight-bearing, such as ribs, shoulders, elbows, and wrists, while athletic tape works better for weight-bearing joints that you have to continue using despite injury, such as ankles, feet, and knees. And athletic tape has a plethora of uses, whereas k-tape is really only useful for musculoskeletal support. Nonetheless, I highly recommend carrying some k-tape in your first-aid kit. It takes up very little room and weight, and it works well if you know how to use it. You can find a lot of how-to video instruction on k-tape techniques online; I suggest practicing with k-tape if you're going to carry it in your kit.

DIFFERENT TECHNIQUES

The techniques illustrated at the end of this chapter focus on providing support for the feet, ankles, and knees, all weight-bearing structures that are prone to injury. An inversion sprain of the ankle—rolling the ankle inward—is, for example,

common in people who are hiking or trekking. When you've been walking long miles and carrying extra weight in the form of a backpack, it's very easy to lose focus, take a bad step, and twist your ankle.

These techniques are designed to give an injured person enough support that they're able to bear their own weight, while preventing further damage to the injured limb. There are many other taping techniques, of course, and many other body parts that can benefit from taping. These are simply the ones that I have found to be most useful in the field.

Before beginning any taping, perform a CSM check on the affected limb (see here). If the patient has adequate circulation distal to the injury, and no nerve or motor dysfunction that warrants having to carry them, then we know that it is safe to tape the injured structure to give them enough support that they can walk.

Be sure to tape the injured limb in the position of function. For the ankle, that's dorsiflexed, or flexed upward. For the knee, that's slightly bent.

See instructions on taping techniques.

CARDIOPULMONARY RESUSCITATION (CPR)

In the event of a heart attack, CPR allows us to minimally imitate the work of the heart by manually compressing the chest and forcing oxygenated blood through arteries. It is

beyond the scope of this book to teach CPR, but becoming certified is easy to do and inexpensive, and I highly recommend that you take a course if you haven't already. You will learn how to identify situations where CPR is appropriate and how to perform chest compressions and rescue breaths. You will also learn how to help someone who is choking and how to open an airway so that a person can breathe.

CPR is successful primarily when it is implemented within minutes after a heart attack, and when followed within minutes by defibrillation. Naturally, CPR has become much more useful since the advent of portable automated external defibrillators (AEDs). In a situation where you are an hour or more from higher medical care, it is unlikely that CPR will be useful unless an AED is available.

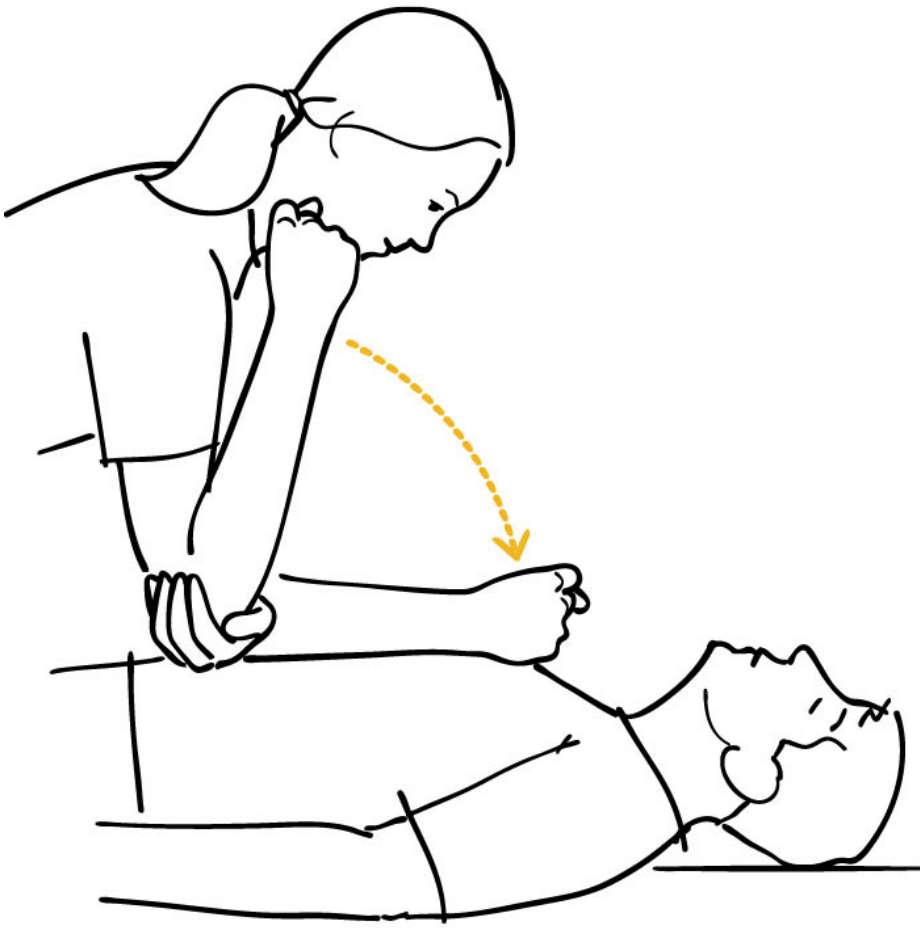
PRECORDIAL THUMP

In a wilderness first-aid situation with a witnessed heart attack, a precordial thump might be helpful and is worth a try. The idea is to convert mechanical energy into electrical energy, and it is your best shot at reviving a heart attack victim when there is no AED available and you are too far from help to be able to realistically administer CPR with any chance of success. There is no established protocol for this procedure that I know of, but here is one version. This is a last-ditch effort to revive a heart-attack victim.

Place the patient on their back. Position yourself so that your arm is parallel to their torso, with your hand above their chest at the location of the heart. Place your elbow on the

patient's belly button or, alternatively, hold your elbow in the palm of your other hand. This position keeps you from raising your elbow when you strike their chest, which will ensure that you don't hit them too hard.

Clench your hand into a fist and then strike the patient's heart area with a hammer-fist type blow. After the first thump, check for a pulse, then repeat as necessary or until it's obvious that the thump isn't working.



ABOVE: *A precordial thump is a last resort in reviving a heart attack victim.*

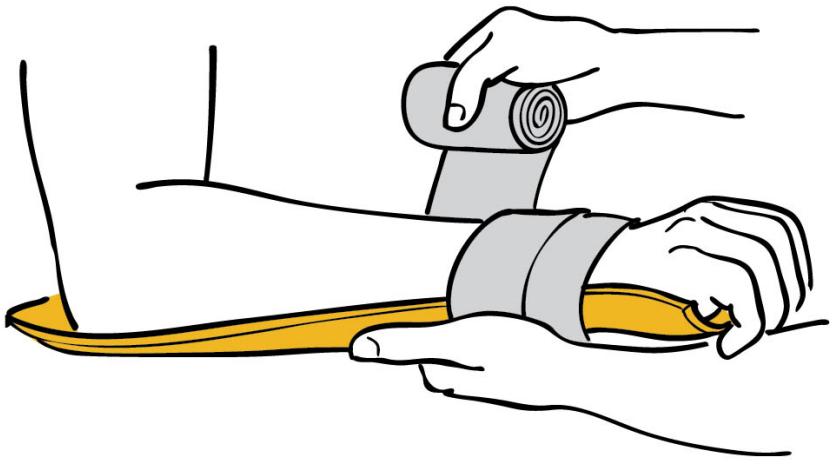
ILLUSTRATED FIRST-AID TECHNIQUES

HOW TO

APPLY A SPLINT

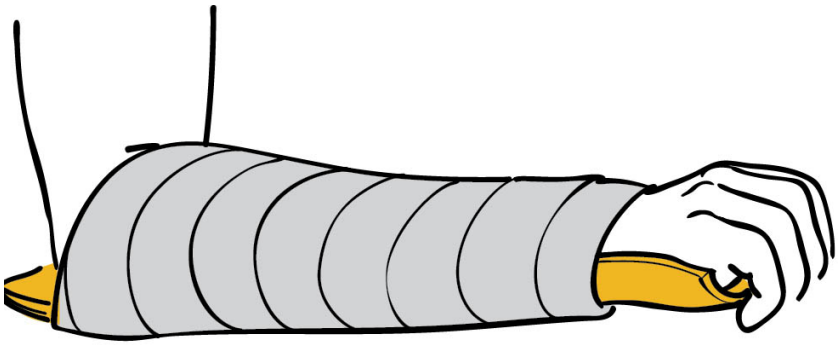
Start and end this procedure by performing a CSM check (see here) on the injured arm.

1. Premeasure and/or preform the splint material, using your own body or the patient's uninjured side. Generously pad the side of the splint that will be in contact with the patient's body. The padding should allow for sweating and not become itchy or uncomfortable. It's best to use spare clothing or other nonmedical items for padding, saving your medical gear for its intended uses.



2. As a general rule, we splint limbs "in the position of function"; this is the most natural position for patients to hold. Attach the splint to the injury by either wrapping it with elastic wrap as shown, or tying it with cloth ties made

of soft material. Make two attachments above and two below the injury, if there is enough room to do so. Make the ties snug enough that the splint will not move, but not uncomfortably tight.



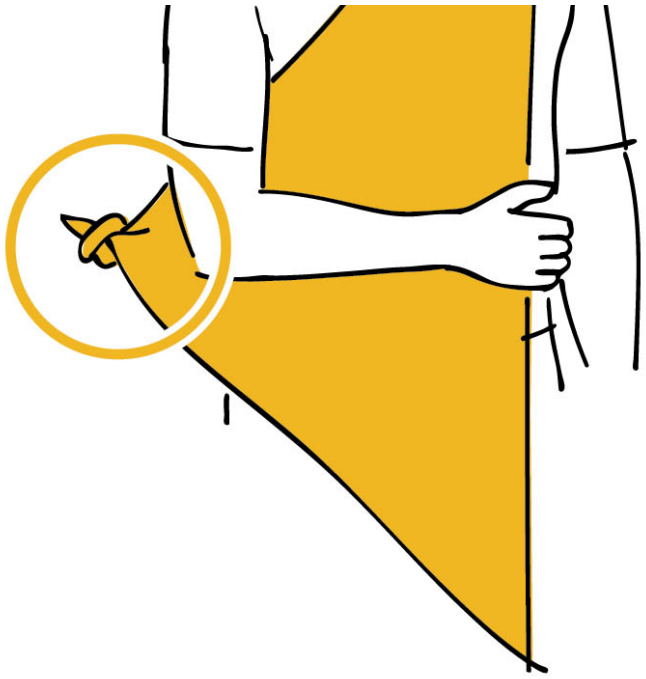
3. Finish with a CSM check. If the splint is too tight, loosen it enough to be comfortable while still firmly in place.

HOW TO

MAKE A SLING FROM A CRAVAT BANDAGE

Start and end this procedure by performing a CSM check (see here) on the injured arm.

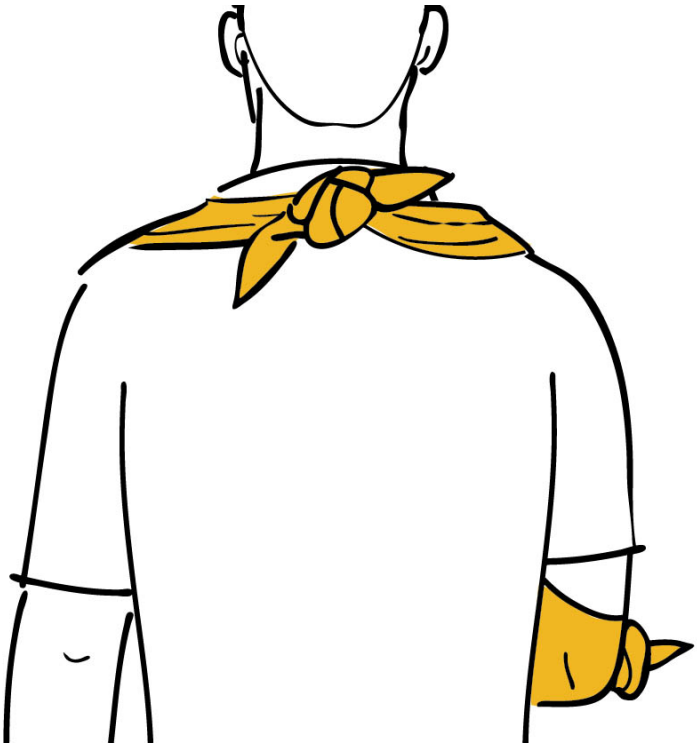
1. Tie an overhand knot at the apex (the point of the triangle) of the cravat bandage. This creates a rounded “bowl” to rest the elbow in. Slide the bandage under the injured arm so that the knot is underneath the elbow.



2. Bring the “top side” corner (nearest to the body) of the bandage across the shoulder of the uninjured side of the

body. Tuck the elbow of the injured arm into the bowl and place the hand in a “pledge of allegiance” position against the chest. Fold the “bottom side” corner of the bandage up and over the injured arm.

3. Tie the bottom side corner to the top side corner behind the neck.



4. Add a “swath” around the arm and body by tying another bandage (or any piece of soft cloth) around (over the top of) the slinged arm and under the uninjured arm, knotting it on the back or on the side, out of the way (so that the knot isn’t uncomfortable, depending on the position of the patient).

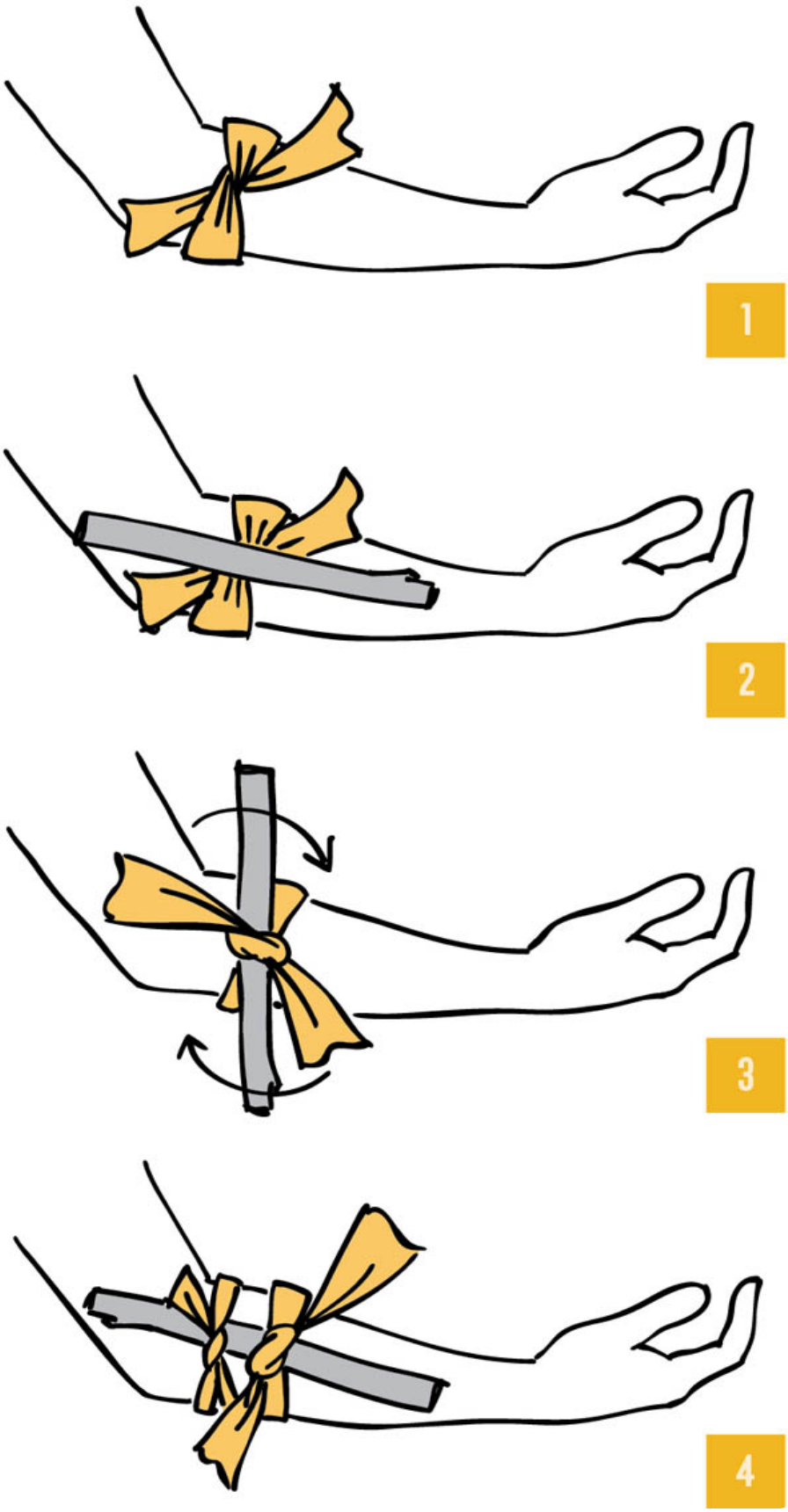
HOW TO

IMPROVISE A TOURNIQUET

As I noted in Chapter 1, it's important to familiarize yourself with your gear so that when it comes time to use it, you're prepared. If you buy a premanufactured tourniquet, buy two, and use one for practice. If you find yourself in a situation where you need to apply a tourniquet but don't have one, you'll have to make do with whatever you have on hand. (Despite what you see in the movies, a belt is generally not a good choice because it can't really be twisted and it is difficult to tighten a belt enough to stop the bleeding.)

These two pages describe one method of improvising a tourniquet. You'll need a strip of material at least 2 to 3 inches wide (if it's any narrower than that, it will cause tissue damage) and about 2 feet long for an arm, or more like 3 feet long for a thigh. You should be able to twist it tightly. A cravat (triangular) bandage works well.

You will also need a stick or some other straight, rigid object —ideally something about the diameter of an adult thumb and 6 to 7 inches long. It has to be strong enough to take the pressure of being twisted tightly without breaking.


1
2
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1. If you can, expose the wound so that you are sure of its location. Apply direct pressure on or just above the wound. Better yet, have someone else (even the patient) do so while you proceed. Wrap the material about 3 inches “above” the wound (between the wound and the torso).

   If it is not possible to get at least 3 inches above the wound without hitting a joint (such as the elbow or knee), then apply the tourniquet just above the joint.

2. Tie an overhand knot in the material as tightly as possible. Place the stick directly on top of the overhand knot. Tie another overhand knot over the stick as tightly as possible.

3. Let the patient know that the tourniquet will be painful. Twist the stick in either direction to tighten the material around the limb.

4. When the bleeding stops, fasten the ends of the stick in place using the tails of the material or a second piece of material.

5. Check the patient’s pulse distal to the tourniquet on the extremity you applied it to. You should detect *no pulse*. You do not want any arterial blood flowing to this extremity and pooling there because it is prevented from returning through the venous system. If this were to happen, it could cause increased pressure in the limb and compartment syndrome (muscle swelling inside the fascia that stops

circulation and causes tissue to become necrotic), which would cause further, lasting damage to the extremity.

6. Mark the patient so that anyone who takes over their care will know that a tourniquet is in place, making note of the time. One way is to write a giant T on the patient's forehead, along with the time, so that there is no chance it will be missed. Once all life threats are taken care of, take a full set of vital signs (see here).

HIGH AND TIGHT

In situations where you're in imminent danger and/or you're not absolutely sure of the wound's location (for example, if you're unable to expose it or have poor visibility), you can apply the tourniquet "high and tight"—that is, at the very top of the limb. For the arm, this would be just below the armpit. For the leg, this would be just below the groin.

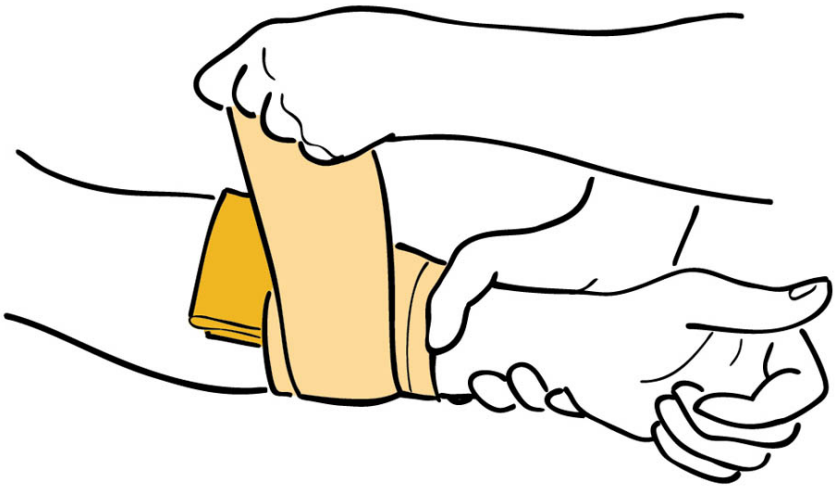
A high and tight tourniquet is not ideal because you are potentially sacrificing part of the limb that you may not need to. However, in situations where there is no better alternative and seconds matter, it is an acceptable alternative.

H O W T O

IMPROVISE A COMPRESSION BANDAGE

Ready-made compression bandages come in many styles, each with specific instructions. As discussed in Chapter 1, you should familiarize yourself with any equipment you purchase so that you aren't using it for the first time in an emergency situation. If you don't have a ready-made compression bandage, you'll have to improvise, as follows:

1. Place thick, preferably sterile gauze over the top of the wound and apply direct pressure. If you don't have gauze, any absorbent, preferably clean material (like a small towel or folded T-shirt) will work as a dressing.



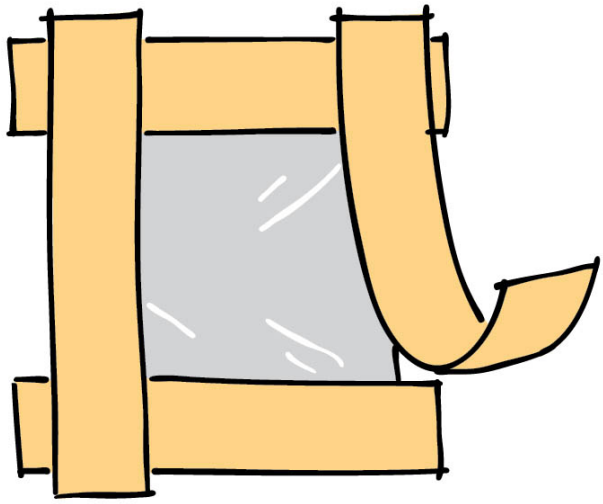
2. Wrap a bandage around the dressing. Elastic wrap works very well and provides pressure on the dressing. If you don't have elastic wrap, wad up a piece of cloth so that it's about the size of a small fist and place that on top of the gauze dressing, and wrap a non-elastic bandage—a cravat, a strip of T-shirt, or other fabric—over the wound. That wad of cloth will create the same type of pressure directly over the artery as though you were pressing into it with your hand.

HOW TO

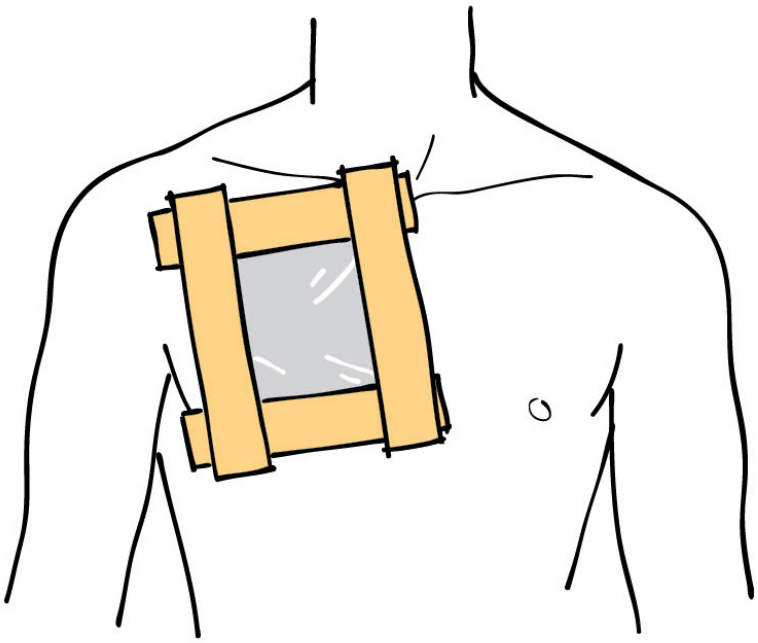
IMPROVISE AN OCCLUSIVE DRESSING

If you don't have a ready-made chest seal in your first-aid kit, you can improvise with tape and some type of malleable plastic, such as a ziplock bag. It should be large enough to overlap the wound edges by at least a few inches all around.

1. Expose the wound. Check for an exit wound, if appropriate (e.g., in the case of a gunshot wound), and expose that as well. Wipe away any blood, water, dirt, or other contaminants around the wound area, if it is possible to do so quickly, so that the adhesive will stick to the skin.



2. Place the piece of plastic over the wound. Tape down the edges of the plastic so that it forms a seal between the wound and the outside.



3. If there is a second (exit or entrance) wound, repeat steps 1 and 2 to seal it.

HOW TO

TAPE AN ANKLE

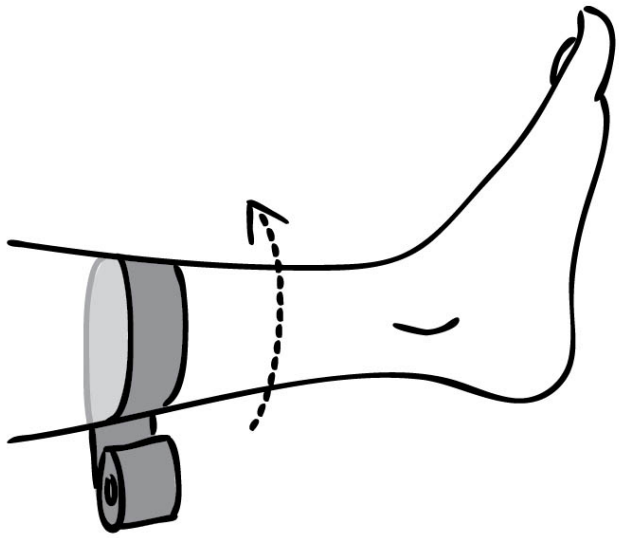
There are several techniques for taping an injured ankle, and over the years, I have found that the best approach is to use two of them in combination: the basket weave and the heel lock.

The basket weave is really more of an underwrap that lends support to the ankle and strengthens the heel lock. If you do not have enough tape to do both, then use only the heel lock. If you have to tape on top of a shoe or boot for a temporary support, just until you can get to a place where you can provide better care, then you would also use only the heel lock. A heel lock on top of a shoe or boot is not ideal, but it will lend more support than the shoe or boot by itself.

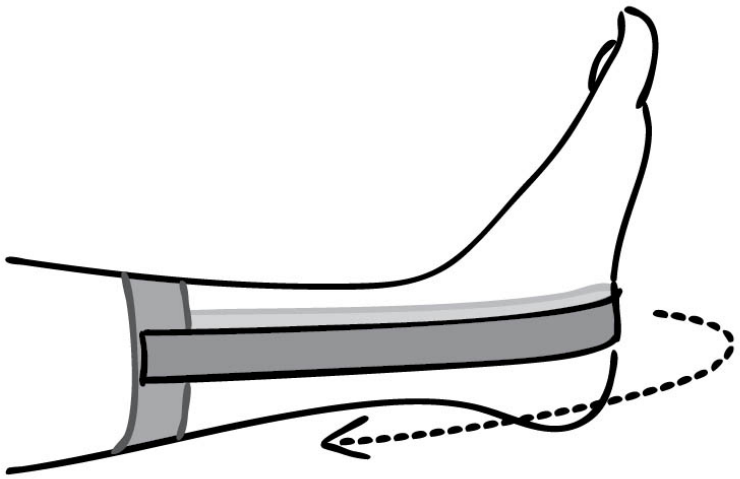
The Basket Weave

The basket weave consists of an anchor point, three stirrups, and three horseshoes made of adhesive tape. The stirrups and horseshoes are interlocking. The tape here should be comfortably taut but not tight.

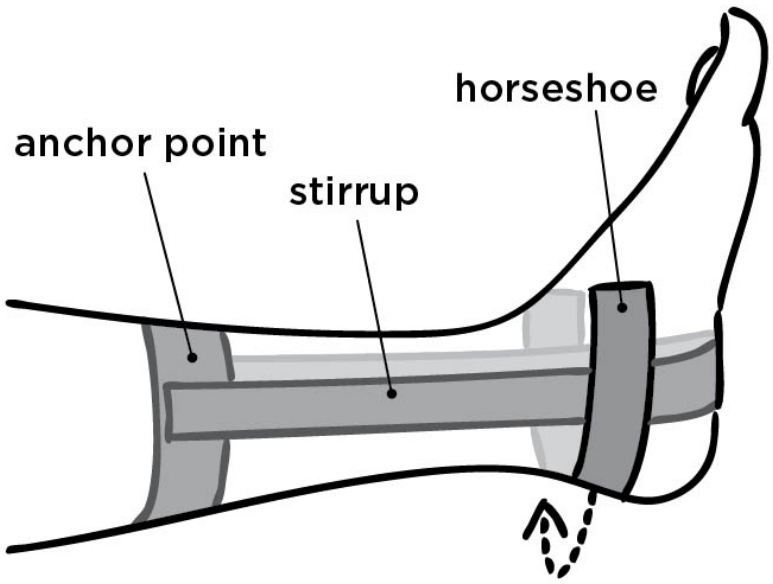
1. Ask your patient to keep their injured foot dorsiflexed—that is, flexed upward, with the toes pointing up toward the knee. Wrap an anchor point around the shin. This is a circumferential wrap at about the height of the top of a typical athletic sock.



2. Starting from the anchor point, tape the first stirrup down the inside of the leg, under the heel, and up the outside of the leg and back to the anchor point; it should look like a stirrup you would place your foot into if you were riding a horse.



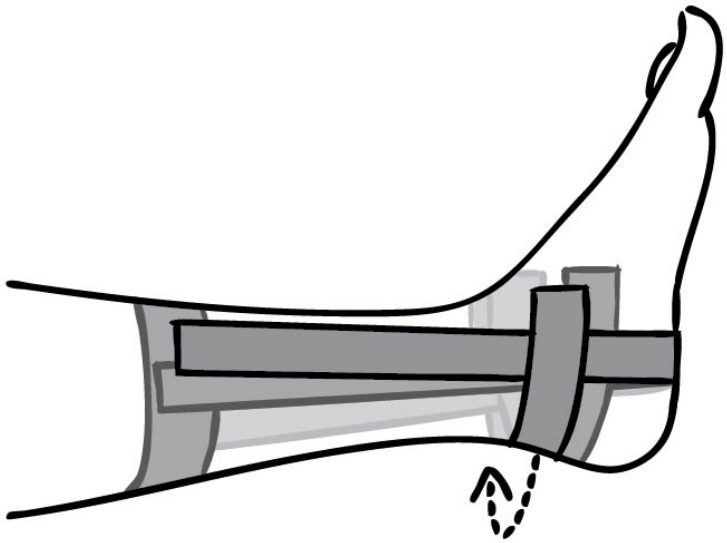
3. An inch or so above the bottom of the heel, around the area where the Achilles tendon attaches to the heel, tape a horseshoe that extends to the top of the foot.



4. Tape a second stirrup that begins and ends at your anchor point, but with the sides slightly offset from the first stirrup and fanning away from each other.

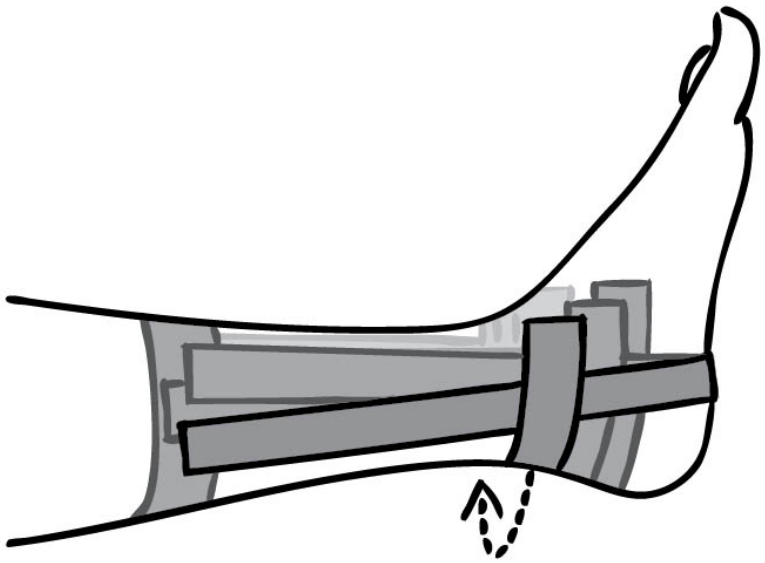
   For example, if you start the second stirrup with the end set more toward the front of the leg from the first stirrup, you should finish the second stirrup with its end set more toward the back of the first stirrup. As you bring the tape under the heel, align it with the existing tape before bringing it up the other side of the leg.

   Add a second horseshoe just above the first, overlapping the first one by about 50 percent.



5. Add a third stirrup, offsetting it in the opposite direction of the second stirrup. If you started the second stirrup toward the front of the leg at the anchor point, then start the third one toward the back of the leg.

   Add a third horseshoe just above the second, overlapping the second one by about 50 percent.

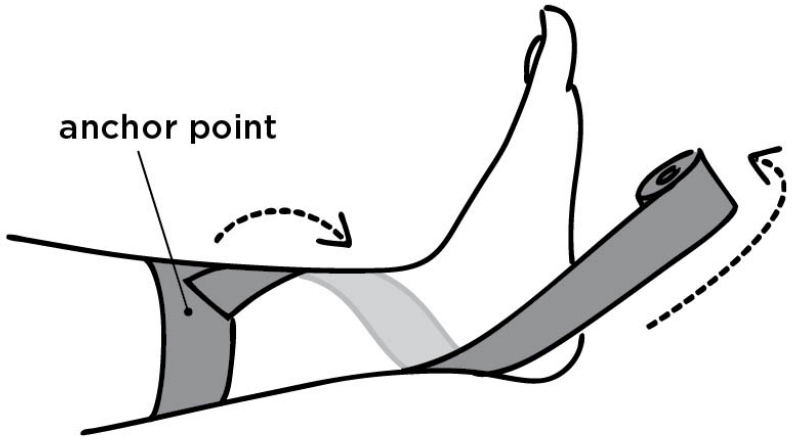


ABOVE: *Note that all the stirrups fan out at the top along the anchor point but converge to a single line of tape under the heel.*

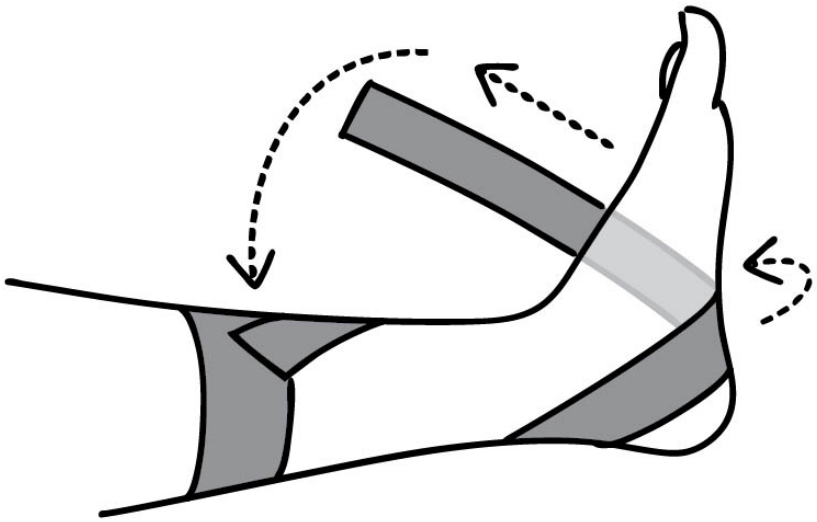
The Heel Lock

The heel lock is a spiraling taping technique that leverages the heel to prevent the ankle from hyperextending inward or outward. If you're combining it with the basket weave, the heel lock goes right on top of it.

1. Ask your patient to keep their injured foot dorsiflexed—that is, flexed upward, with the toes pointing toward the knee. With adhesive tape, wrap an anchor point around the shin at about mid-calf.

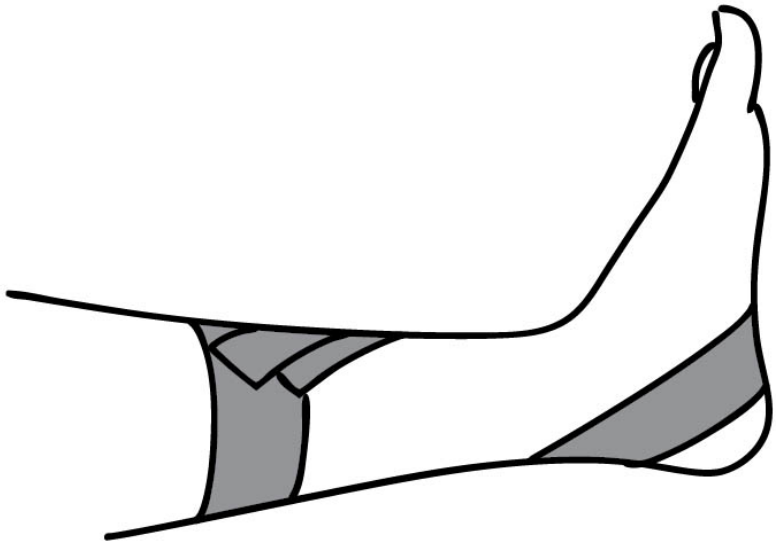


Starting at the anchor point, run a length of tape from the inside of the shin around the calf, spiraling down the back of the heel toward the bottom of the foot.

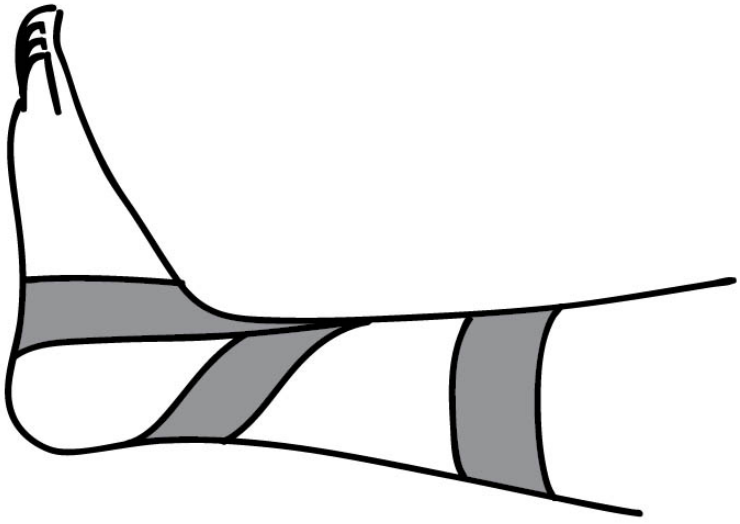


2. Checking that the foot is properly dorsiflexed, pull the tape tightly behind the Achilles tendon, then bring it across the

inside of the heel, below the ankle. Pulling the tape tight in this step will not cut off circulation.



ABOVE: *View from inside of leg*

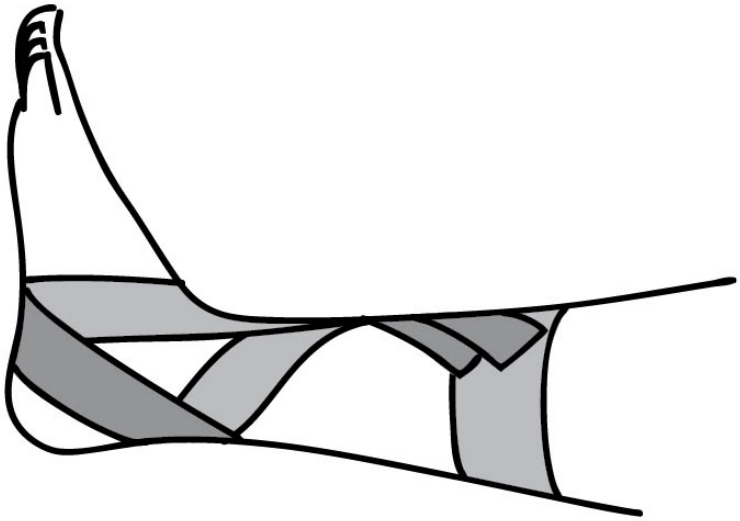


ABOVE: *View from outside of leg*

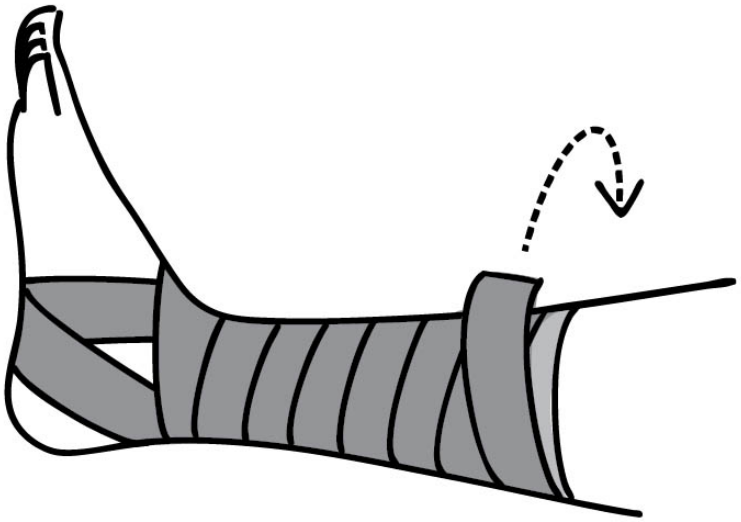
3. Pull the tape tightly under the heel and up across the top of the foot, above the ankle, to the anchor point. Tear or cut the tape to finish the first heel lock.

4. The second heel lock is a mirror image of the first one. Again, make sure the foot is dorsiflexed. Starting at the anchor point, run a length of tape from the outside of the shin around the calf, spiraling toward the back of the heel.

   Wind the tape tightly behind the Achilles tendon, and then bring it across the outside of the heel. Pull the tape across the bottom of the heel and then bring it up and around the instep and ankle. Tear or cut it to finish the second heel lock.



5. Repeat the heel lock at least once more in each direction. Tape over any exposed tape ends by taping in a spiral from the ankle to the anchor point. Don't wrap the tape tightly but make sure to rub it as you lay it down so that it sticks well.



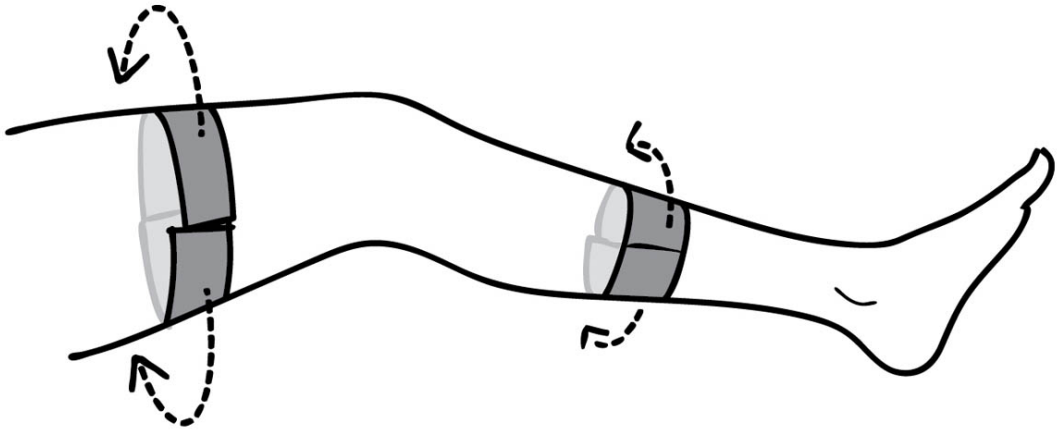
H O W T O

TAPE TO STABILIZE A KNEE

This technique uses 2-inch adhesive tape. If you have a flexible tape, like vet wrap, use that for the anchor points in step 1. The anchor points must allow the large muscles of the thigh and calf to flex and extend.

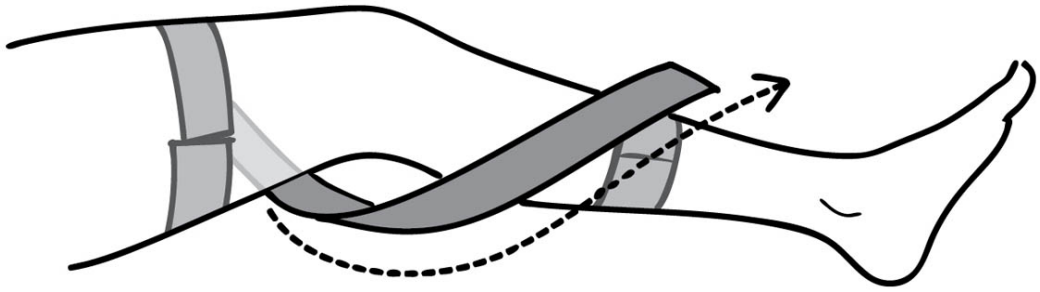
1. Start with the patient's leg slightly bent at the knee (the position of function for walking). Create anchor points around the mid-thigh and mid-shin, preferably using a flexible tape. If all you have is 2-inch tape, lay one strip of tape across the top of the thigh, covering 180 degrees.

   Lay a second strip of tape across the back of the thigh, just above or below that the first strip, with its edges touching the corners of the first strip of tape, around the remaining 180 degrees of the leg. Repeat with two strips at mid-shin.

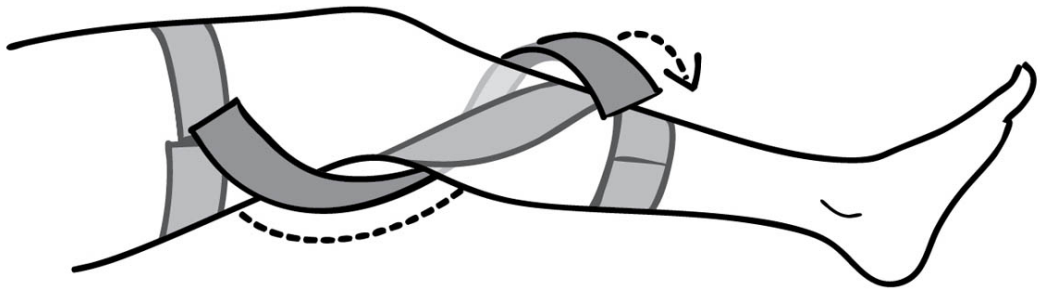


2. Tear off four strips of 2-inch tape, each about 2 feet long (depending on the size of the patient). Attach the first strip to the upper anchor point, behind and slightly to the outside of the leg, angling toward the knee.

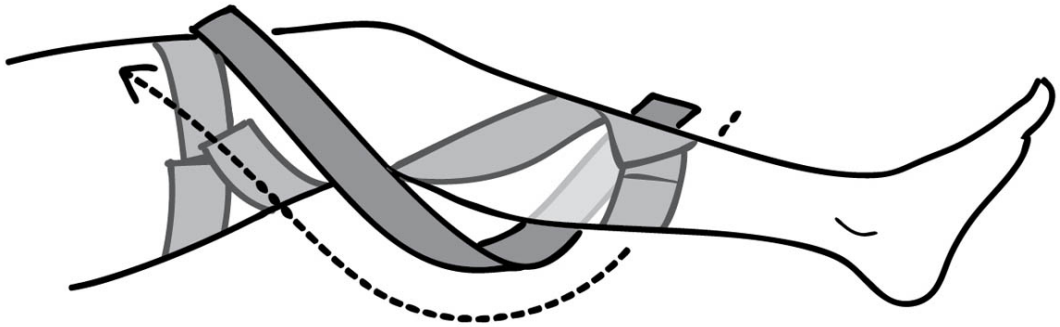
   Holding the end of the tape on the anchor point with one hand on the back of the leg, wind the tape below the back of the knee and around the calf to the lower anchor point, attaching it on the shin. The tape should create a spiral around the leg.



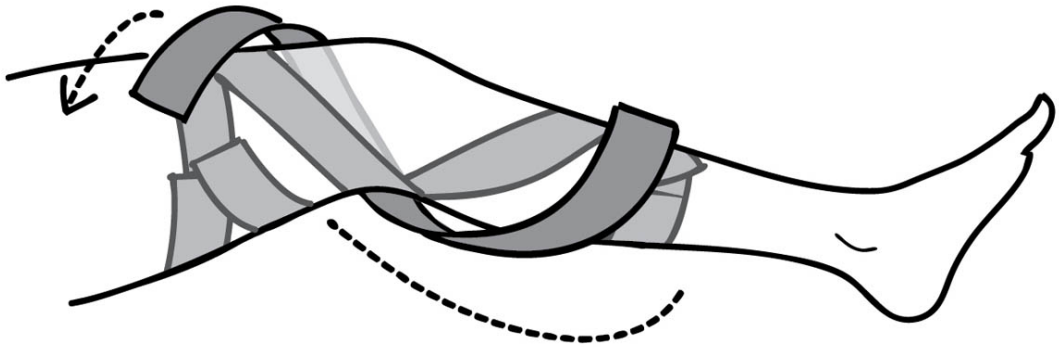
3. Lay down the second strip of tape as a mirror image on the opposite side of the knee, starting at the upper anchor point behind and slightly to the inside of the thigh. Spiral the tape below the back of the knee and over the calf, again attaching the end on the shin at the lower anchor point. These two pieces of tape form the bottom half of a diamond under the back of the knee.



4. Start the third strip on the lower anchor point, behind the calf and slightly to the outside. Spiral the tape above the back of the knee and attach it to the upper anchor point slightly to the outside of the thigh. This strip should make an X with the first strip you put down on the inside of the knee.



5. Lay down the fourth strip of tape as a mirror image of the third one, starting at the lower anchor point and bringing the tape around the back of the calf to make an X with the second strip.



ABOVE: *The tape creates a diamond shape around the kneecap, with an X on either side of the knee.*

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6. Finish with a strip of tape forming a figure 8 around the knee. Start the tape on the upper anchor point, centered (or just a bit off-center) on the front of the thigh.

Spiral the tape diagonally down and across the back of the knee. Continue the spiral around the front of the shin, angling it up to create the bottom of the figure 8 as you bring it behind the calf and then across the back of the knee again, making an X at the back of the knee. Bring the tape back up and around to the front of the leg to finish the figure 8 at the upper anchor point.

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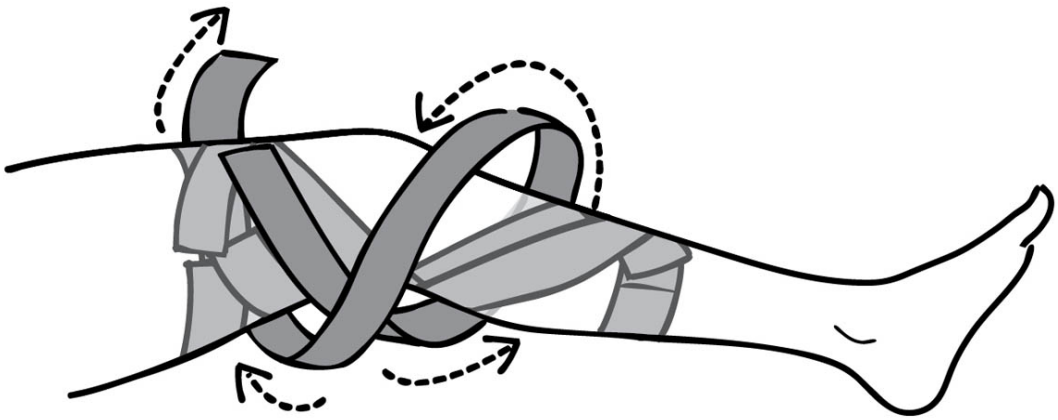
7. Finish with a CSM check (see here) and check your patient's mobility and stability as they put weight on the leg.



PART 2

HERBAL FIRST AID

CHAPTER 4
FOUNDATIONS OF HERBALISM

One of the most basic tenets of herbal medicine is that the body is able to heal itself. We know this, of course; we rely on this fact when we get a cold or cut ourselves while chopping vegetables. In many, if not most, situations, the body wants to and usually is able to heal itself. However, for many people, chronic disease, severe trauma, age, poor lifestyle, genetics, and other factors may interfere with the normal healing process. In most of those situations we now depend on pharmaceutical medicines to help us.

And they often do, although with a price. Pharmaceutical medicine is often necessary, particularly for severe trauma and in acute or chronic medical situations, but often it is only treating the symptoms. Herbal medicine allows us to delve deeper into the body's ability to heal.

A concept that might help elucidate the difference between pharmaceutical and herbal medicine is that pharmaceuticals help the body from the outside in, while herbs help the body

heal itself from the inside out. This is not to be taken as a literal statement, so what exactly does it mean?

PARADIGMS OF HEALING

Most people must make a mental paradigm shift when they start working with herbs. Those of us raised in Western cultures are used to a system of diagnosis and treatment that follows a purely biochemical, for-profit model of medicine. While biochemistry and phytochemistry (the study of chemicals found in plants) are important aspects of the world of herbalism—in particular in what is sometimes called "medical herbalism" or even "Western herbalism"—it is not the full picture that makes up the world of herbal medicine.

PHARMACEUTICAL VS. HERBAL MEDICINE

Let's consider the condition of body tissue, using a respiratory flu virus as an example. When we are infected with a respiratory virus, the tissue of the respiratory tract mucosa begins to change in response to that invasion. Immune-signaling proteins and molecules activate, send signals, and go to work to defend their cellular and tissue territory. What we commonly call an "incubation period" for the virus is often the beginning of an attack on our mucosal cells. Our mucosal defense mechanisms respond and a microwar ensues as our

body attempts to maintain health and tissue homeostasis while the virus attempts to proliferate.

There are at least two different approaches to treating this event: We can attack the invading virus with external weapons (pharmaceutical medicine), or we can bolster and support the existing defense mechanisms of the tissue that is under attack (herbal medicine). These two approaches are not necessarily mutually exclusive, but they underscore the difference in approach between the two systems.

It's important *not* to fall into the trap of comparing herbs to pharmaceuticals and using them as one-for-one substitutes. The most successful approach to using herbs in a Western physiological sense is to first consider how you can support the affected cells, tissues, and organs. That support might come in part from antibacterial or even antiviral herbs. But even the best antibacterial herbs, used by themselves and misused as though they were antibiotics, generally cannot come anywhere near the efficacy of pharmaceutical antibiotics. Herbs absolutely have unique antibacterial effects that can make them very potent, such as when dealing with biofilms (see here). But I have never successfully used herbs to treat an acute infection without also focusing on support for the tissue in my overall approach.

It is vital to understand that idea, and all of the formulas and protocols in this book follow this line of thought. Of course, this can be extrapolated to the studies of nutrition, lifestyle, and exercise. The basis for healing disease with herbs (or with any healing model) must rest upon a foundation of healthy and balanced living in the first place.

TERRAIN VS. MICROBE

Why can two people be exposed to the same pathogen (for instance, a flu virus) but only one gets sick? The concept of "terrain versus microbe" is much debated. Many factors are involved in maintaining the health of our body. One of those factors relates to the terrain (the tissue itself and cells that make up that tissue; e.g., whether mucosa, endothelium, or skin) we present to a pathogen in the first place. We commonly call the mechanisms by which our body resists disease "*the* immune system," but every part of the body has some type of immune system. A key concept in working with herbs successfully is understanding how to target and support all of these mechanisms of balance, health, and immunity.

Another way to think of terrain is through the concept of cellular health. All cells in the body must maintain a certain range of balance in order to function optimally, whether they are the functional cells of the liver or the epithelial cells in the mucosa of the upper respiratory tract and the urinary tract. Immunity happens at a cellular level, and by supporting that level of cellular health throughout the various tissues and organs of the body, we can maintain health or even pull our body out of a diseased state back into health. Herbs do this extremely well.

POTENCY VS. TOXICITY

Another important concept is that of potency and toxicity. Some of the most potent herbal medicines can also be the most toxic. It is critical to know the general range of effect and to be able to focus that effect toward the tissue that needs it most, while also knowing the dosage and duration for which an herb is safe to take.

I like to demonstrate this concept with a graph mapping out the potency and toxicity of two different plants, poke root and plantain leaf. As we can see, poke root, while very potent (in particular as applied to lymph support and movement), is also high on the toxicity scale. In other words, we have to be careful about how much poke root we take and for how long. Plantain, on the other hand, is also very effective and potent, yet extremely low on the toxicity scale. In fact, plantain leaf can be cooked and eaten.

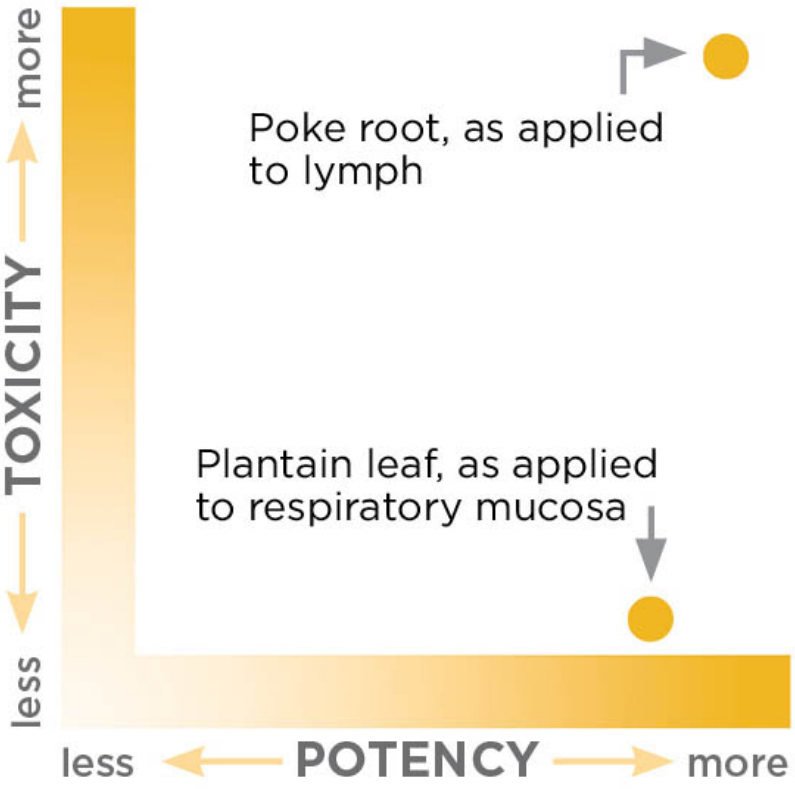
Bear in mind that the method of application—which determines the specific tissue the herb will address— plays a great role in the herb's toxicity and potency. Is it being applied topically to the skin? Topically to the mucosa? Inhaled through a nebulizer? Taken orally? Sublingually? It is easy to become overwhelmed with this much data, but fortunately the general concepts are pretty simple.

Potency and toxicity can vary greatly depending on where the plant was grown, how it was harvested, and how it was stored. For instance, an herb may have higher levels of a specific constituent at one time of the growing cycle, and lesser amounts of another constituent. An example is andrographis (*Andrographis paniculata*), which has varying

amounts of andrographolide depending on when during the growing cycle it was harvested.

Hand in hand with this concept goes the variable of how well the plant is prepared, including drying, storing, tincturing, infusing into an oil, and the like. Every step in preparing effective medicine from live plants has a bearing on the final result.

POTENCY VS. TOXICITY



ENERGETIC AND SPIRITUAL HEALTH

In the world of plant medicine, we see many different paradigms shaping the framework by which we understand how plants work as medicine. Energetic paradigms— for example, Traditional Chinese Medicine, Ayurvedic medicine, and traditional Greek medicine (which is making a popular comeback in the United States)—describe the body in terms of concepts like hot, cold, wet, and dry.

If your energy is excessively hot and dry, for example, it might show as chapped mucosa, dry skin, some aspect of your pulse or the way your tongue looks, the type of food you crave, your behavior patterns, your response to seasonal changes, and so forth. For treatment, practitioners prescribe herbs that are more wet and cool or cold in order to move your energetic state more into balance. (This is, of course, a highly oversimplified explanation.)

In a spiritual paradigm, which is found in many Indigenous cultures, illness may not have a physical root but rather is understood to be a manifestation of a spiritual imbalance. Indeed, if we look at the chronic illnesses that present as autoimmune or autoallergic conditions (eczema, lupus, asthma), the nutrition-related diseases (obesity, type 2 diabetes), and psychological issues (PTSD, anxiety, chronic insomnia), we start to discern a pattern.

As human beings have become increasingly urbanized and addicted to technology, most of us spend almost no time connected to the spiritual essence of life that gives us food, water, and air: the earth. We have depleted our soils to the

extent that even “organic” food severely lacks the micronutrients it once had. We have a cultural addiction to stimulants such as sugar, caffeine, and nicotine. Our reliance on smartphones and computer screens has completely drowned out the connection to nature that has been woven into our DNA over the course of hundreds of thousands, if not millions, of years. Without that vital connection, our spirit suffers — and so in turn do our body and mind.

The idea of a spiritual source for disease does not allow for the easy, quick fixes that we are accustomed to. Reconnecting to nature and a spiritual purpose takes seasons and years to slowly have its effect on our health. This paradigm is hard to imagine but it is absolutely a valid aspect of health and disease. We could even say that much of our disease—certainly in regard to chronic illness—makes its way through our lives from the spiritual to the energetic to the physical.

We tend to respond only to the physical symptoms, and they are the focus of this book. However, be aware that there are other aspects to health beyond treating a specific disease or dysfunction. We may only notice these aspects when it becomes impossible to ignore that our bodies are not working correctly, even with treatment.

ABOVE: *An energetic paradigm uses herbs to balance the body's energy.*

THE ENERGY OF PLANTS

Organolepsis is the act of using our senses to analyze plants and the medicines we make from them. The way that a plant feels, tastes, smells, and makes us feel when we taste it allows us to evaluate our unique personal relationship with that plant, and for this reason it has a strong connection to the concepts of energetic medicine. With the exception of plants that we

know are highly toxic or dangerous, we can use organoleptic testing to acquaint ourselves with a new plant. Nibbling on a leaf, how do we describe the effect? Heating? Cooling? Bitter? Sweet?

There are many ways to categorize energetics, potency, and medicinal effects, but they all start with our own personal relationship with each plant. So we can see that when we are working with herbal medicine, we are targeting not just physical health but also energetic and spiritual health — and that all three have their root in our own relationships that we form with each plant.

ABOVE: *To make herbal medicine, you must have a deep familiarity with the plants you use, in all their forms.*

GETTING STARTED WITH PLANT MEDICINE

Plant medicine can be a highly effective alternative or complement to pharmaceutical medicine in nearly every imaginable (nonsurgical) health care situation. An herbalist has the advantage of knowledge and creativity to meld the bioenergies of plants (and all that is involved in their cycle of life) into an herbal preparation and finally a delivery strategy that, above all, supports the tissue most needing restoration of balance.

But where does that knowledge and creativity come from? Learning to work with herbal medicine can be daunting when you realize how much information there is to sort through. Even though I have been doing this since 1987, I often feel like I am barely at the start of all that I would like to know. All forms of medicine are constantly changing and evolving, and there are so many moving parts in the study of botanical medicine that it can quickly become overwhelming if you don't have some way of organizing the information.

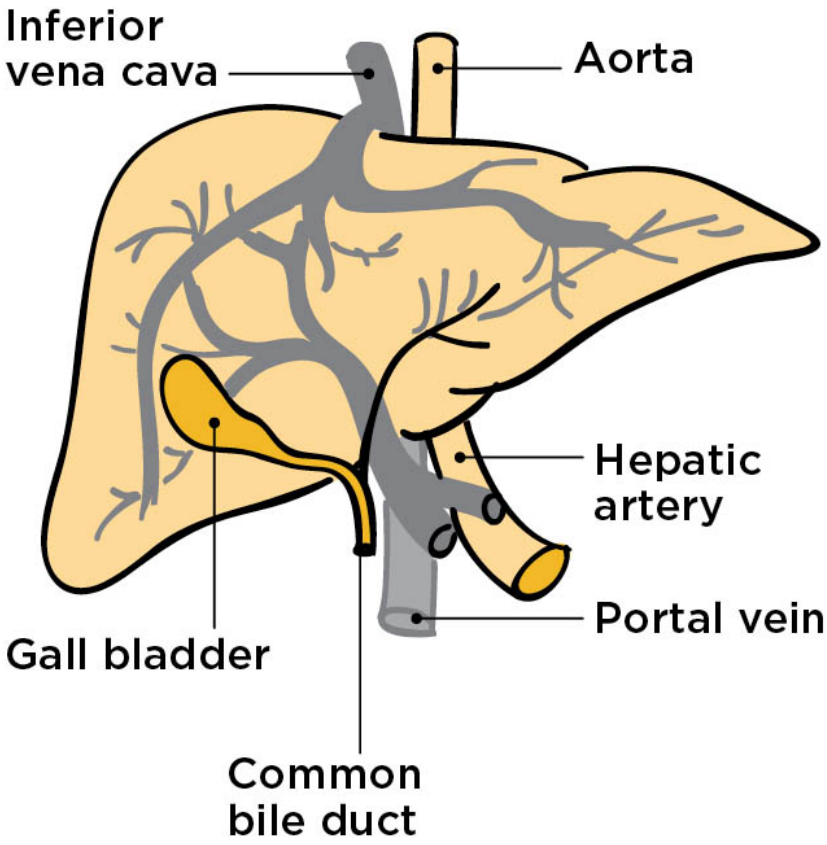
As with any new subject, the sooner you start to feel like you are seeing results in what you are learning, the more encouraging it is to keep studying that subject. For this reason, I encourage beginning herbalists to focus on the three areas of the human body that can give you the fastest successful return on the time you spend studying and working with herbs: the liver, the mucosa, and the immune system.

These three play a foundational role in the physiology and pathophysiology of the body and disease processes. Herbs affect them quickly and profoundly, and when we use the appropriate herbs to support them, we see immediate positive results. I call them the trifecta of beginner's herbalism, and we'll discuss them first.

THE LIVER

The liver is responsible for hundreds of critical functions that maintain homeostasis throughout various other systems, detoxify metabolic compounds and waste products, store and release energy, help regulate hormones, and much more. Liver health plays a major role in digestive health and vice versa. As the nutrients (and toxins) we ingest make their way through the digestive tract and enter the bloodstream, most of them flow through the portal vein and into the liver to be broken down and used, stored, or eliminated.

ANATOMY OF THE LIVER



Poor food choices, alcohol, drugs, tobacco products, and other substances put the liver under a certain amount of cellular stress. Over time, the tissue in the liver slowly becomes unable to function efficiently. When this happens, we say that the liver suffers from *congestion*. A congested liver may start to produce less and lower-quality bile, which is a key component in breaking down food and processing waste. With less bile available, the digestive system becomes less efficient at breaking down food and other compounds we ingest. As a result, more toxins and other compounds are transported via

the portal vein to the liver, which becomes even more congested. In this way, liver congestion leads to a spiraling cycle with worsening effects across our entire body, and particularly our systems of digestion and elimination, including the skin.

In my experience, one of the fastest, most effective ways to help the body heal from gut damage, blood sugar issues (e.g., prediabetes, hyperinsulinemia, type 2 diabetes, sugar cravings), autoimmune skin issues (e.g., eczema, psoriasis), and digestion problems (e.g., gastroesophageal reflux disease, bloating, constipation, poor digestion) is to support liver function.

Bear in mind that simply taking liver-supporting or liver-decongesting herbs will not "cure" anything. In treating any chronic disease, herbal therapy is only part of a holistic approach that must include dietary and lifestyle changes, as well as other herbs that may be necessary to help the body cope with stress and hormone imbalances. One advantage to starting with the liver is that many herbs can have an amazing effect on the liver very quickly, sometimes within a few days. This gives a person not only relief but also confidence that the herbs are indeed helping.

GENERAL SUPPORT AND DECONGESTION

In targeting the liver with herbal medicine, we have two primary goals:

SUPPORTING THE LIVER. Liver-supportive herbs can help the liver recover from chronic stress caused by hepatitis, cirrhosis, fatty liver disease, chronic alcoholism, or long-time use of recreational and/or pharmaceutical drugs.

DECONGESTING THE LIVER. When we want the liver to become more efficient at ridding itself of wastes, producing bile, and detoxifying the compounds that enter through the portal vein, we turn to liver-decongesting herbs. Manifestations of liver congestion can include gastroesophageal reflux disease, irritable bowel syndrome, small intestinal bacterial overgrowth, constipation, alternating constipation and diarrhea, bloating, and discomfort after eating, whether chronic or episodic.

Herbs can have other effects on the liver but focusing on these two goals (support and decongestion) is a simple and effective way to quickly improve liver function. Many herbs will fulfill both roles.

BITTERS

Bitter herbs are so called because of the way they taste. They promote the production of digestive enzymes all the way from the mouth to the digestive tract to the liver (in the form of bile). In this manner, they could be considered decongesting to the liver. In fact, many of the herbs that support or decongest the liver are also bitters; there is a lot of overlap.

Like all medicinal herbs, bitters have a range of health benefits. For instance, hops (*Humulus lupulus*) is a wonderful

bitter that is also a nervine and calming for anxiety. White horehound (*Marrubium vulgare*) is an expectorant and mild bronchodilator, so it is very useful for support of the respiratory tract.

Herbs for the Liver

These are some of the bitter herbs I commonly use for the liver. You can find more information on many of them in the materia medica.

- Artichoke leaf—supportive
- Blessed thistle—decongesting
- Burdock—decongesting
- Chicory—decongesting
- Citrus peel—a classic bitter herb
- Dandelion—supportive
- Gentian—a classic bitter herb
- Goldenseal—a classic bitter herb
- Milk thistle—supportive, decongesting
- Oregon grape—decongesting
- Plantain—supportive
- Wormwood—a classic bitter herb

THE MUCOSA

The mucosa, or mucous membrane, may be thought of as the "skin" inside our bodies. Like our external skin, it separates the

outside world from the inside world. The mucosa lines our digestive tract, our respiratory tract, our urinary and reproductive tracts, and our eyes (conjunctiva). The vast majority of acute infectious diseases that attack the body do so through the mucosa. Stabilizing, supporting, and strengthening the mucosa gives us a huge advantage in dealing with infectious diseases.

A *vulnerary* is an herb that protects and heals tissue. Most mucosal vulneraries are demulcent, meaning that they protect and soothe tissue. Many contain heteropolysaccharides that become mucilaginous—gooey or gummy—when mixed with water and form a protective film on mucous membranes. Examples of demulcent herbs are marshmallow root and leaf, prickly pear flower, and elm bark. Other mucosal vulnerary herbs are not necessarily demulcent, but they are supportive of mucosal immune function. Echinacea (the aerial parts) is a classic example.

Demulcent herbs need to be extracted in water primarily. A cold infusion (see here) is the best way to do this. Of course, they can also be taken directly into the mouth if the oral or the gut mucosa is the target tissue; for instance, you could simply chew on dried prickly pear flowers. To preserve any highly demulcent herbs in a fluid extract (rather than drying them and then preparing them as a cold infusion), a multifractional extraction (see here) is the best way to proceed.

Herbs for the Mucosa

These are some of the mucosal vulnerary herbs that I commonly use. You can find more information on many of

them in the materia medica.

- Comfrey
- Echinacea
- Elm bark
- Licorice
- Marshmallow
- Plantain
- Prickly pear flower
- Sida

THE IMMUNE SYSTEM

The human immune system works constantly to keep us healthy and puts every part of our body to use. From the surface of our skin to the mucosa of our airway and digestive

tract to the white blood cells in our bloodstream and tissues, our immune system is a vital foundation for our health.

The immune system is generally divided into two categories: the innate and the adaptive. The innate immune system is considered to be the nonspecific response to any foreign substance or pathogen. If you cut yourself or are exposed to an airborne cold virus, your innate immune system usually responds within minutes or hours, if not immediately. The adaptive immune system, on the other hand, is a specific response based on previous exposure to an antigen (antigen = "antibody generator").

The adaptive response involves a lot of communication between immune cells and, along with the innate immune system, involves the lymph, which is the part of the immune system that removes debris and toxins at the level of capillary circulation in our tissues.

Orthodox medicine often overlooks the lymph and immune systems. However, these systems are very receptive to herbal medicine and strengthening them is the mainstay of many of my approaches to treating acute and chronic illness and inflammation. A fundamental benefit of supporting the immune system is the ability to proactively prevent acute infectious disease. We do this by stimulating and supporting the innate and the adaptive immune system cells, while at the same time stimulating the movement of lymph in the body.

The herbs used in immune system support will always work best in formulas, rather than being taken as single herbs, a.k.a. "simples." Of course, other aspects of health—a nutritious diet, adequate sleep, healthy lifestyle choices, and so on—are important to immune function as well. Interestingly, one of

the most important factors in immune health is exercise. Rather than being driven by a pump, like blood, our lymph is driven by the movement of skeletal muscle, including the diaphragm, around the lymph vessels. The more we move our bodies and breathe deeply, the better our lymph system functions.

Most immune and lymph support formulas are most effective when taken in smaller dosages over a short period of time when you're feeling stressed or after you've been exposed to a pathogen. For a standard adult dosage, I recommend ½ to 1 teaspoon of an immune support formula twice a day (ideally once in the morning and once in the evening before bedtime). There should be no need to take the formula for more than 5 consecutive days. If it's going to work in fighting off a pathogen, it will work best in the first 24 to 48 hours.

The herbs that play a role in both moving lymph as well as activating the white blood cells that make up our immune responses range in effect from mild to strong. In fact, some of the strongest lymph movers are also somewhat toxic and should not be taken for a long period of time.

ABOVE: *Poke*

Herbs for the Immune System

These are some of the herbs I often use to support the immune system. You can find more information on many of them in the materia medica.

- Astragalus
- Turkey tail
- Blue flag—medium to high toxicity, use in smaller
- Ocotillo
- Poke—medium to high toxicity, use in smaller ratios (e.g., ½ part) in formulas and with caution

ratios (e.g., ½ part) in formulas and with caution
- Boneset
- Cleavers
- Cordyceps
- Echinacea
- Maitake
- Red clover
- Red root
- Reishi
- Shiitake
- Stillingia

THE URINARY TRACT

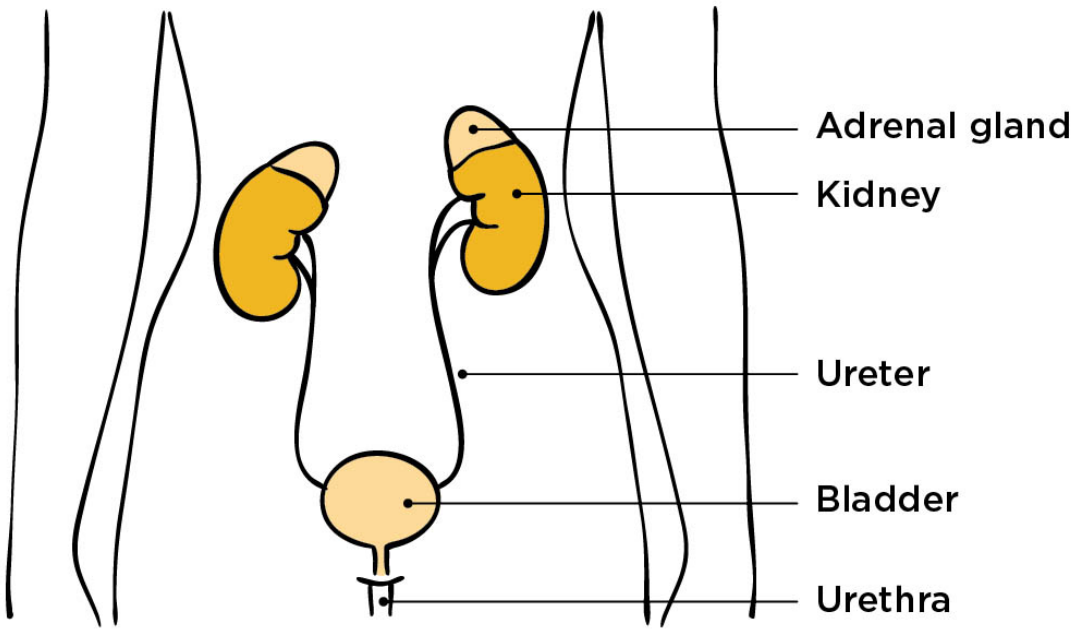
The urinary tract is a system of organs including the kidneys, ureters, bladder, and urethra. This system enables many functions related to blood pressure regulation, pH regulation, filtration of the blood and waste removal, hormone regulation, vitamin D and red blood cell production, and more.

We generally divide the urinary tract into upper and lower segments. The upper urinary tract includes the kidneys and the ureters that drain from the kidneys into the bladder. The lower urinary tract begins at the bladder and includes the urethra, which leads from the bladder for urination.

The urinary tract as seen through the eyes of an herbalist could also be called a channel of elimination. This does not mean that the sole function of the urinary tract is to eliminate; rather, its job is to balance the fluids, waste products, and micronutrients in the body. The concept of flow versus stasis is incredibly important when you're talking about any channel of

elimination. Stasis leads to disease; flow maintains health. When you consider that the kidneys filter about 150 quarts of fluid per day in the healthy adult in order to eliminate just 1 to 2 quarts of urine, that is a lot of flow!

ANATOMY OF THE URINARY TRACT



The solution to pollution is dilution. In my training as a Special Forces medic, I heard that saying used often in reference to irrigating wounds to prevent infection. But it also holds true for our eliminative channels. The urinary tract must have healthy flow in order to remain in balance, and indeed, dehydration and insufficient urination are often significant triggers for a urinary tract infection (UTI). The presence of bacteria in the urethra is not unusual, but the lack of flow of

urine to flush bacteria and maintain fluid balance allows bacteria to proliferate and colonize. (See Chapter 15 for a detailed discussion of treating UTIs.)

Herbs for the Urinary Tract

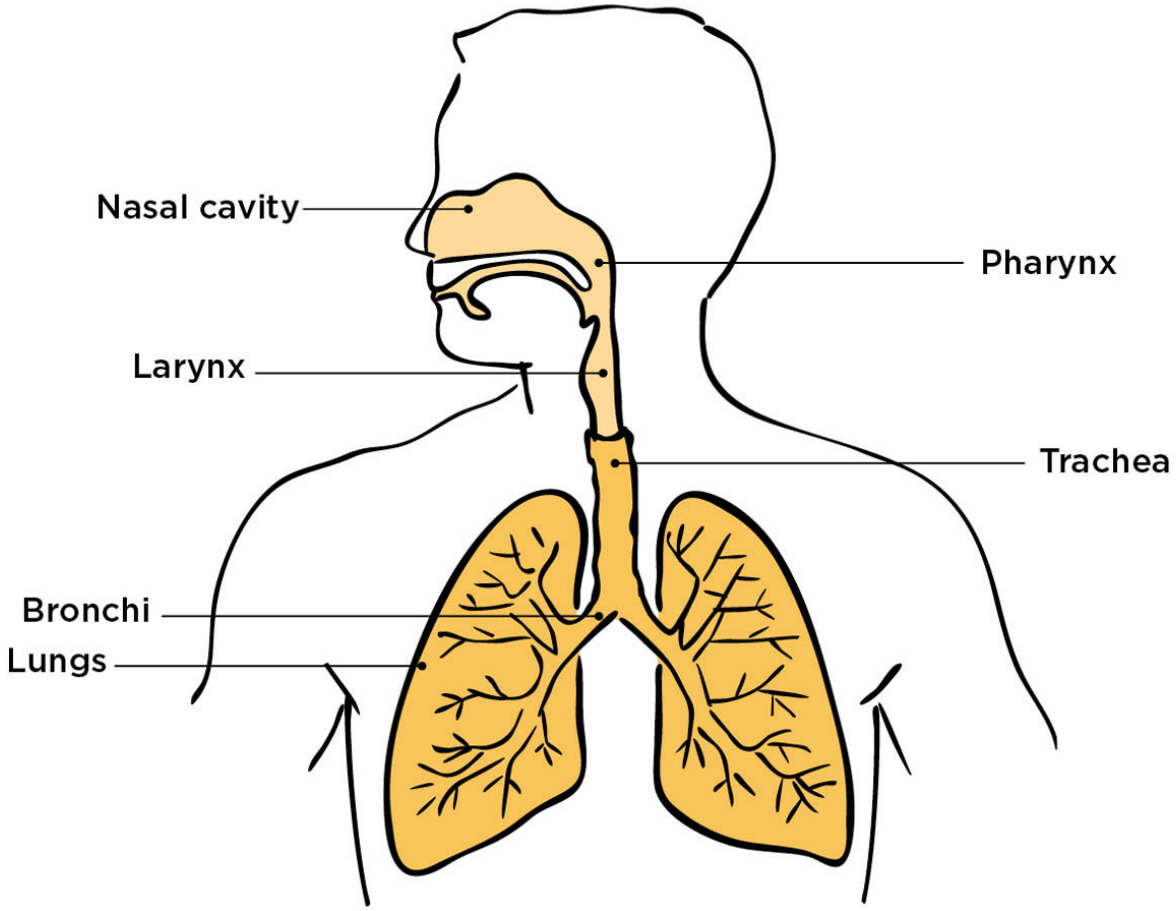
These are some of the herbs I commonly use for the urinary tract. You can find more information on many of them in the materia medica.

- Baikal skullcap
- Bilberry leaf and berry
- Cinnamon
- Cleavers
- Cordyceps
- Corn silk
- Cranberry
- Echinacea
- Goldenrod
- Gravel root
- Horsetail
- Kava
- Marshmallow
- Mullein root
- Neem leaf
- Nettle root and seed
- Ocotillo
- Plantain
- Pomegranate rind and peel
- Prickly pear flower
- Pumpkin seed
- Sida leaf
- Usnea
- Uva ursi
- Yarrow

THE RESPIRATORY TRACT

The respiratory tract is divided into upper and lower sections. The upper airway comprises the nose, the mouth, and all the structures from those two locations down to the vocal cords, including the sinuses, nasopharynx, and pharynx. The lower airway includes the lower part of the larynx, trachea, and lungs (bronchi, bronchioles, alveoli, pleurae).

ANATOMY OF THE RESPIRATORY TRACT



The deeper we go into the respiratory tract, the more serious or critical a disease process usually will be. For example, an upper respiratory infection is normally not nearly as dangerous as a lower respiratory infection, such as pneumonia or pleuritis. Fortunately, lower respiratory infections are much less common than upper respiratory tract ones. In the lower respiratory tract it is more common to have to deal with chronic disease such as asthma or chronic obstructive pulmonary disease (COPD).

Many herbs are powerfully effective for the respiratory tract, and they can be administered in different ways to target specific tissues, whether we are working with acute infection, chronic disease, injury, or other issues.

ORAL DOSAGE. When we take oral medicine, it travels the entire route from the mouth to the gut, thereby passing directly over the upper respiratory mucosa. If we drink tea, for instance, it passes through the mouth, where some absorption through the tongue and cheek tissue occurs, and then washes across the mucosa and lymph tissue in the back of the throat before we swallow it.

GARGLES, SPRAYS, AND LOZENGES. These methods of application allow us to soak the upper respiratory mucosa with the herb formula. The longer the contact with the mucosa, the greater the amount of formula that is absorbed into the affected tissue.

POULTICES AND PLASTERS. These are topical applications that also provide extended exposure. A plaster of propolis and

ground licorice root could be packed into a canker sore (aphthous ulcer) on the inside of the mouth, for example, or a poultice of echinacea and plantain could be placed between the cheek and the gum to treat an infection.

NASAL RINSES AND SPRAYS. A neti pot type of rinse or a nasal spray is an excellent way to access the sinuses in the case of a sinus infection or allergies.

NASYA. This method of applying an oil to the membranes inside the nostrils delivers herbal benefits directly through the mucosa.

SUBLINGUAL ADMINISTRATION. A dosage of a tincture or glycerite placed under the tongue absorbs through the thin epithelial layer of the membrane directly into the bloodstream.

STEAM INHALATION. A decoction inhaled as a steam provides direct relief to the lungs.

NEBULIZATION. Nebulizing a tincture, glycerite, or decoction for inhalation is an effective way to deliver constituents directly into the bloodstream via the alveolar membrane.

SMOKE. Inhaling smoke may occasionally be a useful way to move herbal constituents into the respiratory tract, though it isn't generally recommended.

See Chapter 14 for a detailed discussion of treating respiratory ailments.

ABOVE: *A neti pot, herbal tea, nasal spray, and steam inhalation are all useful applications for respiratory issues.*

Herbs for the Respiratory Tract

These are some of the herbs I consistently use for the respiratory tract. You can learn more about many of them in the materia medica.

- Elecampane
- Gumweed
- Licorice
- Lobelia
- Pleurisy
- Usnea
- White horehound
- Wild cherry

- Marshmallow
- Mullein
- Plantain
- Yerba mansa
- Yerba santa

THE DIGESTIVE TRACT

The gastrointestinal tract plays a huge role in the overall health of our body. Issues that occur in the gut can be acute (food poisoning) or chronic (gastroesophageal reflux disease), or even acute flare-ups associated with a chronic condition or weakness. But beyond issues directly related to the organs of digestion, the gut plays a critical role in many autoimmune and chronic allergy problems such as eczema, psoriasis, asthma, lupus, fibromyalgia, uncontrollable weight gain, thyroid issues, rheumatoid arthritis, osteoarthritis, and many more. Over the years, I have worked with thousands of cases of chronic illness, and I'd estimate that gut health played some role in probably 90 percent of them.

For this reason, it is critical to understand gut health from a standpoint of nutrition and lifestyle. There is no point in using herbal medicine for a chronic health issue stemming from the gut if you are not also addressing the core causes. Even acute gut issues may be much less severe and easier to recover from if the gut is healthy in the first place. Let's briefly discuss a few key gut health topics that form a foundation for talking about herbal medicine for the gut.

HEALTHY EATING

Without getting into the myriad topics around specific diets (each of which provides enough material for the thousands of books already out there), let's quickly review some obvious facts about proper nutrition. Healthy foods are usually whole foods. Preparing your own meals from healthy organic food that you have grown or bought is better than eating prepackaged foods, fast food, or even well-prepared good food at a restaurant. Reviewing the contents of any food items you buy at the store is a crucial habit. You've probably heard it before: The more ingredients that are listed on a food's packaging, the less healthy it probably is. With food, simplicity is usually best.

It's also wise to learn about the toxins and potential allergens that are present in our food sources and cause chronic gut health issues for many people. The most common ones are sugar, dairy, and gluten. Add a sedentary lifestyle to the daily ingestion of these substances and you have a recipe for chronic illness.

Suitable intake of fiber is essential for a healthy gut. Fiber is the indigestible material (e.g., cellulose, pectin, lignin, inulin) found in plant foods like fruits, vegetables, whole grains, nuts, and seeds. It comes in two forms: soluble, meaning that it absorbs water, or insoluble, meaning that it does not. The human body requires both types, particularly for the health of the digestive system, but also for a range of other benefits, including fiber's ability to reduce cholesterol levels and the risk of heart disease and to protect against blood sugar spikes

and diabetes. Fiber, particularly soluble fiber, also functions as a *prebiotic*, or food for the beneficial bacteria living in our gut (for more on that topic, read on).

Working with diet and lifestyle to address gut-related chronic illness will be more successful than any combination of herbs could be. However, once you have created a fundamentally healthy set of nutritional and lifestyle patterns, herbs can work quickly and effectively to help the body resolve that illness.

BONE BROTH

Bone broth contains L-glutamine, an essential amino acid that plays an important role in intestinal and immune system health by supporting the growth and function of our intestinal absorptive cells (enterocytes). Bone broth can be taken as a supplement, but a more complete source is real bone broth. You can buy prepared bone broth, but it's easy to make it yourself. Chicken, beef, lamb, rabbit, and other meat sources all make excellent bone broth. I prefer to use the leftover carcass and bones from meat I have cooked myself.

My favorite method is to put the bones and connective tissue in a slow cooker, add enough water to cover them, and cook at low heat for 24 hours. Strain and refrigerate that broth, reserving the bones. Cover the bones with fresh water, this time adding 1 to 2 teaspoons of apple cider vinegar per quart, and cook at low heat for another

24 hours. Strain and add this liquid to the first batch in the refrigerator. Then, again, cover the bones with fresh water and apple cider vinegar, and now add vegetables (carrots, onions), medicinal mushrooms (e.g., reishi, maitake, shiitake), and seaweed or kelp. Cook at low heat for 24 hours. Strain and mix with the first two batches. Discard the bones.

The broth can be frozen and used as needed. Try sipping it warm by the cupful, or use it as a base for soup, rice, or gravy, among other dishes.

PROBIOTICS AND PREBIOTICS

A crucial part of gut health is the symbiotic and commensal bacteria layer of our gut ecology, otherwise known as our microbiome. We could not survive for even a day without this microbiome, and an unhealthy microbiome—whether it has insufficient bacteria, an insufficient diversity of bacteria, or overpopulation by the wrong species of bacteria (or fungi)—can lead to many health problems.

A healthy microbiome consists of hundreds of different bacterial species; the species vary depending on where in the gut they are found. These beneficial bacteria support proper gut health in a number of ways. They compete for food and space in the gut in a way that doesn't allow pathogenic (harmful) bacteria to take hold and flourish. They produce antibacterial secretions to attack and eliminate other bacteria

that may not belong in a healthy microbiome. They assist in the production of mucus, which is necessary for the gut immune system, and they help maintain the cellular integrity of the intestine.

Foods that keep our microbiome flourishing are prebiotics. Foods or supplements that introduce beneficial gut bacteria are called probiotics.

Probiotic supplements are widely available. Some contain the correct bacterial species in a form that will make it through the acidic environment of the stomach and to the correct location in the intestines, but some do not. Some brands available at health food stores may be contaminated with pathogens, may have bacterial strains that are not necessarily helpful, and may or may not contain all the strains as labeled. In short, as with most things, you get what you pay for. There are reliable brands, but they tend to be pricey and it takes a little bit of detective work to find them.

A better approach is to simply eat a lot of probiotic-rich foods. Fermented foods like sauerkraut, kimchi, yogurt, and kombucha are good sources of probiotics, and they are easily made at home. Many of them also contain the prebiotics that feed the beneficial gut bacteria, so it's a two-for-one deal.

BITTERS

Herbs with a bitter flavor aid digestion in a number of ways. Among other things, they increase the flow of digestive enzymes (e.g., amylase) from the mouth, where the first step of digestion takes place, to the liver and pancreas. They also often

tend to increase liver activity in a way that encourages better production of bile and improves the detoxification and metabolism of nutrients and toxins that enter the liver from the digestive tract.

See Chapter 15 for a more detailed discussion of digestive ailments.

Herbs for the Digestive System

These are some of the herbs I use for the digestive tract. You can learn more about many of them in the materia medica.

- Algerita
- Andrographis
- Artichoke
- Black walnut
- Blessed thistle
- Chamomile
- Chicory
- Devil's claw
- Gentian
- Ginger
- Hops
- Licorice
- Marshmallow
- Meadowsweet
- Milk thistle
- Oregon grape
- Plantain
- White horehound
- Wild yam
- Wormwood

THE NERVOUS SYSTEM

The United States is considered a highly developed nation. The vast majority of residents enjoy ready access to food and clean water, government-supported education, some form of reliable transportation, a constant supply of electricity, and state-of-the-art entertainment and communications systems, among other advantages. In contrast, in many other parts of the world, people don't have enough to eat, don't have access to running water (let alone clean or hot water), and cannot rely on electrical power grids. For many people, violence is ever present, war is raging, or the fear of being imprisoned, tortured, or killed is a daily part of life.

Stress, however, is relative to the person who is living and experiencing it. In fact, the way in which two different people respond physically, mentally, and emotionally to the exact same stressors can be (and often is) entirely different. Stress is largely defined by how we individually perceive the stressor, rather than being a force with a consistent measurable effect for all people. From an objective standpoint, a situation of mortal danger is wildly different from, say, having a stressful job, but in either situation, our body's response to stress produces specific biochemical results that are remarkably similar.

The stress response has been well documented: When we experience a stressor, whether physical, emotional, or psychological, the sympathetic nervous system (SNS) triggers the release of epinephrine and norepinephrine. As a part of that chain of events, our hypothalamus-pituitary-adrenal axis (HPA axis) stimulates the release of cortisol from our adrenal glands. During the stress response, our breathing and heart rate increase. Our body sends more oxygen to our muscles and

brain in preparation for reaction to the danger. In a situation of real physical danger, this chain of events prepares us to defend ourselves or to run away (the "fight or flight" response). As the threat passes, stress hormone levels drop, the stress response dissipates, and our body begins to relax.

With ongoing stress, however, the adrenal glands are constantly releasing cortisol and other hormones. Persistent surges of these hormones affect the body at a cellular level, leading to, among other things, increased blood pressure and the buildup of fat stores. They also contribute to feelings of depression and anxiety and suppression of the immune system. The number of anxiety- and immune-related health issues in this country has statistically been on the rise for several decades.

Elevated levels of cortisol over time can create a hyperactive state in the SNS, initiating a cascading effect. The more cortisol floods our body, the more activated our SNS becomes, and the more cortisol it calls for. In my experience, we can become addicted to this cycle, reinforcing the negative spiral with our behavior.

Of course, to address these types of issues around stress, we must first begin to fix the sources of the problem. Unhealthy behavioral cycles, poor nutrition, lack of exercise, and other lifestyle factors must be changed or there is no point in throwing herbs at the problem. However, herbs can be very useful to help us through these changes and support our nervous system, as well as the related endocrine functions. Some of the ways in which they can support the nervous system are:

- As nervines, helping calm us and soothe “frayed” mental states like anxiety and irritability
- As analgesics, relieving pain, which both triggers and is triggered by stress
- As soporifics, helping us sleep
- As antidepressants, helping us cope with depression
- Helping with addiction recovery
- Helping us focus and improving our mental concentration
- As adaptogens, helping our bodies adapt or adjust to stress, whether physical, mental, or emotional

ADDRESSING PAIN

Pain can be part of a cycle of cascading causative factors. Stress creates tension and exacerbates pain, which correspondingly creates physical mental and emotional stress, which can cause the body to react with inflammation to deal with the increased physical tension, which causes more pain, and so forth. I feel that many chronic health issues are cyclic cascades in this way, and the trick to using herbal medicine successfully is to intervene at one or more places in the cycle to disrupt it.

How we classify pain differs depending on the paradigm of medicine we are studying. In Western pharmaceutical medicine, pain is often divided into somatic (musculoskeletal) and visceral (organ) pain. There are other classifications, however, from the different types of headaches (migraine,

cluster, frontal, tension, eyestrain) to neurogenic pain and the psychological aspects that accompany chronic pain. One of the many benefits of working with herbs is that they tend to have a broad spectrum of effects, and one herb may be useful for many different types of pain.

Herbs for Treating Pain

- These are some of the herbs I often use for treating pain. You can learn more about many of them in the materia medica.
- Black cohosh— for musculoskeletal pain caused in part by skeletal muscle spasms and contractions
- Cramp bark—for musculoskeletal pain caused in part by skeletal muscle spasms and contractions
- Devil's claw—for inflammation and pain throughout the body
- Feverfew—for headaches, some types of migraines, and muscle pain
- Lobelia—for organ pain caused by smooth muscle contractions (e.g., gallbladder, bladder, or gut pain)
- Meadowsweet—for headaches and most types of pain in general
- Ox knee—for musculoskeletal pain, joint pain, and inflammation-related pain throughout the body
- Silk tassel—for organ pain, and in particular pain related to smooth muscle spasms, particularly in the digestive tract

ADDRESSING FATIGUE

Physical fatigue is frequently a factor in creating or exacerbating stress. Whether caused by ongoing exertion or insomnia, chronic fatigue suppresses immune response and reduces the body's ability to handle stress. Herbs can help us overcome fatigue, but this concept must be approached with caution. The idea of taking herbs in the same manner that you might consume an energy drink or a cup of coffee is the absolute opposite of what we should be trying to do. Dealing with chronic fatigue and the multitude of causative and cyclic factors involved is almost always a complex issue. First we must identify and address the source of fatigue, then we can use herbs to help restore the body's natural energy.

Herbs for Treating Fatigue

These are some of the herbs I commonly use for treating fatigue. You can learn more about many of them in the materia medica.

- American ginseng—increases energy and libido, helps the body cope with physical and mental stress, can enhance athletic performance
- Ashwagandha—builds endurance, often boosts libido, supports restful sleep, may increase mitochondrial function (see also Neurogenerative Herbs, below)
- Cordyceps—can increase athletic performance, boost energy, and may increase mitochondrial function (see also

Neurogenerative Herbs, below)

- Damiana—benefits sexual function, prostate health, and urinary incontinence; provides mental energy and focus; boosts physical energy
- Eleuthero—a gentler version of ginseng; helps the body deal with stress, anxiety, and depression; combined with skullcap can help with postaddiction withdrawal
- Rhodiola—excellent in formulas for fatigue, lack of mental motivation, and depression; can help improve memory and cognitive function; may increase levels of dopamine

NEUROREGENERATION

Neuroregenerative herbs help stimulate the regeneration of the myelination—the myelin sheathing—around our nerve tissue. This sheathing can be affected by inflammation, infection, age, trauma, and other causes. Situations that likely involve myelin sheath damage include herpes family viral infections, meningitis, exposure to toxins, Lyme disease, and physical trauma. I find that neuroregenerative herbs can often increase the efficacy of other herbs when they are formulated together, especially in many types of nervine formulas. Interestingly, most of the herbs that support myelination also support mitochondrial function. The mitochondria are the energy-producing organelles in most of the cells of our body. Improving the function of mitochondria can improve energy and even help slow some of the processes associated with aging.

Once again, it is important to note that simply throwing more herbs at what is essentially a lifestyle or nutrition problem will not fix anything. We have to support and fix the root of a problem, but repairing and nourishing nerve tissue and mitochondrial health can help us along the way.

Herbs for Neuroregeneration

These are some herbs that can help with myelin sheath repair and mitochondrial support. You can learn more about many of them in the materia medica.

- Chinese black cardamom—heating and stimulating, increases blood flow, perspiration, and urine flow; helps heal myelin sheath damage to nerve tissue
- Chinese senega—may help improve cognitive function and spatial awareness; relieves anxiety and depression
- Japanese dogwood—helps heal myelin sheath damage and supports mitochondrial function
- Lion's mane—famous for its nerve support
- Ox knee—an amazing anti-inflammatory; very useful for musculoskeletal and joint pain

ADAPTOGENS

An adaptogen is an herb that helps the body deal with the effects of chronic stress or even repeated acute stress. As we've

discussed, repeated stress leads to a cascading cycle of cortisol release and cellular damage, not to mention chronic tension, anxiety, and fatigue. Add poor nutrition, sugar, alcohol, caffeine, nicotine, recreational drugs, sedentary habits, and other negative lifestyle habits to the mix and the body will start to buckle.

Adaptogens are not meant to support a poor lifestyle. They're not a substitute for making positive changes in your lifestyle and nutritional choices. However, as you are working to address the stressors in your life, adaptogens can provide tremendous support for your nervous system, helping you to become better able to respond to the inevitable stressful events in your life in a more balanced way. I commonly use cordyceps, lion's mane, ashwagandha, eleuthero, American ginseng, skullcap, and Chinese black cardamom as adaptogens.

CHAPTER 5
MAKING MEDICINE

Making medicine from plants is very rewarding. In fact, many people focus entirely on this aspect of herbal medicine and nothing else. As is the case for just about every other chapter in this book, there are whole books written about this topic alone.

Although it is important to understand the basic concepts of medicine making, don't worry too much about every little detail at first. Medicine making is both an art and a science, and the best medicine is usually made by people who have a good grasp of both the art and the science. They are able to work with the science behind extraction while also having a good feel for what makes good medicine.

However you approach it, realize that no matter how meticulously you measure every single grain of herb, you will always be facing a certain amount of inconsistency. For example, you may prepare a formula using an herb you ordered online that was grown in another part of the country, dried incorrectly, and stored in a warehouse for 3 months

before landing in your mailbox. The next time you make that formula, you may use the same herb, but this time it was grown in your own organic garden and harvested at the exact right time to maximize the constituents you want.

Will the final products be the same? Absolutely not. How can you determine the difference when you have measured out the exact same amount of the herb in each case? This is where organoleptic experience comes in. If you have tasted and sampled 10 or 20 or 100 different batches of the same herb, you should be able to taste any batch and know pretty well where the potency lies.

The most important information about the effectiveness of an herbal medicine comes from the actual results. If you are using your medicine in a clinic, then you will have a record, as clients come back for follow-up, about how well your formulas are working. Whatever the circumstances, it is critical to keep a personal log of notes about your medicine-making process for each herb. For instance, perhaps you read some research that made you decide to move from an alcohol tincture to a glycerite or a multifractional extract for a specific herb. You test it yourself (organolepsis) and are very pleased with it. You keep notes about the process and add feedback from clients, family members, or friends, or even yourself, after using it.

Additionally, gather and record information from books, classes, reliable online sources, and herbal teachers. Then use what you have learned every time you get a chance. Just like the items in your first-aid kit, your knowledge of herbal medicine requires regular use so that you feel comfortable and competent in making and administering herbal remedies for any first-aid situation you encounter.

THE BASIC CONCEPTS OF MAKING MEDICINE

There are a few overall rules to keep in mind when making medicine.

Organolepsis (see here) is one of the most important tools for determining the strength of your preparations. The potency of any preparation can be highly variable, based on many factors, so you have to personally test the medicine you make and learn the taste and feel of each herb.

For storing herbs and remedies, use glass and/or high-quality stainless steel whenever possible. For herbal first-aid kits that must be mobile and lighter weight, I use BPA-free Nalgene bottles. Nalgene can be used for long-term storage of both tinctures and glycerites as well, but generally glass is better.

Practice good hygiene when working with herbs and preparations. Wash your hands. Ideally, you should wear gloves. Keep preparation surfaces and utensils clean. Rinse mixing bowls, herb grinders, and so on after each use.

***Always* label your containers.** You don't want to have to throw out a preparation because you cannot remember

what it is. Include the date, ingredients (use botanical names), and relative ratios of each herb in a formula.

When you are making formulas, it is a good practice to mix in gentle herbs to help balance the stronger ones, which are usually more toxic.

THE RIGHT HERBS TO THE RIGHT TISSUES

As mentioned in Chapter 4, one of the vital concepts of herbal medicine is that the herbs must come into contact with the tissue they are intended to affect. In particular we have to make sure that we are delivering the full spectrum of that plant's constituents to the target tissue.

Constituents, in this context, are the molecular compounds found in a plant, such as caffeine in the coffee bean and nicotine in the tobacco leaf. Any given herb has thousands, if not tens of thousands, of constituents. A lot of Western research into herbal medicine has focused on identifying and extracting the "active" constituents, which are the compounds that give the herb its medicinal effect. However, there is considerable debate as to whether those so-called active constituents are, in fact, the sole compounds that give plants their unique physiological effects. Another field of thought

holds that the full panel of constituents in a plant work in synergy, modulating, enhancing, and regulating each other.

Furthermore, studies comparing the effects of a whole plant (say, garlic) *minus* what is considered to be the active constituent (in this case, allicin) to the constituent itself have shown very similar effects between these two seemingly opposite forms of the herb.

Granted, it is entirely possible that we simply do not know what the active constituent in a plant is, or if there even is such a thing. We could debate these issues forever, but I will say that based on my own experience, our bodies generally respond better to the medicine of the whole plant (or plant part being used) than they do to an extract of a single constituent.

DELIVERY METHODS

So now we come back to the question of how to get that medicine, intact, to the targeted tissue. This requires some basic knowledge of physiology and pathophysiology. For example, we have to know that an herb taken orally will be absorbed through the gut and filtered by the liver before passing into the bloodstream. If we're targeting the tissues of, say, the upper airway or the urinary tract, we can't expect that the full spectrum of constituents in an herb taken orally will actually reach them.

The good news is that we can use creativity in preparing and administering medicines to deliver them to specific tissues. Take as an example strep throat, which is a red-flag illness to refer to higher care but also a good illustration of how a

myriad of herbal strategies may be used if higher care is not available. Here, our target tissue is the mucosa in the throat that is the site of the infection. How do we get herbs in direct contact with that tissue?

We have a few options. We could make herbal lozenges so that the herb, mixing with saliva, is constantly being swallowed and coating the mucosa of the throat. We could make an herbal infusion or tincture and use it as a gargle to soak the throat, or we could use that infusion or tincture in a spray to mist the back of the throat. We could also follow up with a dose of a substance like propolis tincture, which acts as a sort of antimicrobial liquid bandage coating on top of the other herb formulas we have administered.

Biochemistry also plays a role in our decision making. To get herbal constituents into the bloodstream, for example, we might consider sublingual (under the tongue) or pulmonary (inhalation) administration. Both are very efficient delivery methods, but there are a number of potential obstacles, including molecular size and polarity (solubility). Where possible, the delivery methods that are useful for a given herb are addressed in the materia medica.

However, a lot of the opinions (including my own) about the most effective way to use and apply herbs are usually just scientific guesswork based on years of working clinically with herbs for hundreds or even thousands of varying medical conditions — and this includes the very important experience of having herbs *not* work for specific cases and conditions.

Effective Delivery Methods

Tissue	Delivery Methods
Ears	Tinctures, glycerites, oils
Eyes	Saline washes, compresses, oils
Gut (including the liver)	Tinctures, glycerites, infusions, decoctions, capsules, oils, enemas, suppositories
Lips	Oils, salves, lotions, compresses, washes, poultices
Mouth (including sublingual tissue)	Tooth powders, washes, poultices, plasters, oils, tinctures, glycerites
Muscles, joints, connective tissue	Oils, salves, liniments, soaks, poultices, plasters
Nose	Rinses (neti pot), oils (nasya), powders (snuffs)

Effective Delivery Methods

Tissue	Delivery Methods
Reproductive organs	Soaks, salves, oils, compresses, steams, vaginal or urethral suppositories, poultices, plasters, salves, tinctures, glycerites
Skin (anywhere on the body)	Oils, lotions, salves, poultices, plasters, soaks, washes, compresses, soaps, tinctures, glycerites
Upper/lower respiratory tract (including administration into the bloodstream via the lungs)	Steam inhalations, nebulizers, smoke, vapes
Urinary tract (via the digestive tract)	Tinctures, glycerites, infusions, decoctions, capsules

ROUTES OF ELIMINATION AND METABOLISM

It is also helpful to learn the routes of metabolism and elimination of many of the important constituents in the medicinal plants we use. Different constituents move through the body in different ways, which dictates how they come into contact with cells and tissue and whatever pathogens might be present. For example, some constituents are eliminated only through the gut, which makes them very useful for gut issues, but not helpful for other areas of the body, because those constituents never make it out of the gut and into the bloodstream to reach other tissues throughout the body.

An example is berberine, a yellow alkaloid found in barberry (*Berberis* spp.), goldenseal (*Hydrastis canadensis*) root, Oregon grape (*Mahonia* spp.) root, and many other plants. Although berberine is helpful in many locations of the body for a variety of issues, it does not readily absorb out of the gut and into the bloodstream. This means that, while it is very effective when used for gut-related issues or topically on the skin, it will not be of much benefit for a urinary tract or lower respiratory tract infection when administered orally.

Other routes of elimination are the urinary tract, the respiratory tract, and the skin (also called the integumentary system). Examples of herbs that encourage elimination and thereby help deliver constituents through these pathways are:

- Urinary tract: uva ursi and bilberry
- Respiratory tract: juniper and garlic
- Skin: prickly ash and ginger

USING SOLVENTS

One important goal when making medicine is to preserve the herbs in a form that allows us to use them conveniently and to store them, ideally for years. Dried herbs are convenient to use, but they will eventually lose strength, even if stored properly. The most effective, longest-lasting method of preservation is to extract the constituents into a solution using solvents. The chart on the left lists the solvents commonly used in home-based herbal medicine making. (Bear in mind that there are many solvents other than the ones listed in this table.)

Pros and Cons of Extraction Solvents for Herbal Medicine Making

Solvent	Advantages	Disadvantages
Water	Universal solvent, easy to heat, no negative reactivity issues (e.g., patients will not have allergies or addiction to it). Highly polar. Inexpensive.	Does not function as a preservative. Will not extract nonpolar constituents.

Pros and Cons of Extraction Solvents for Herbal Medicine Making

Solvent	Advantages	Disadvantages
Ethyl alcohol (e.g., grain alcohol, whiskey, vodka, and so on)	A very effective solvent. Will extract some constituents that water will not. Miscible (forms a homogenous mixture in all proportions) with water. Solutions and remedies that contain more than 25% alcohol by volume (ABV) will preserve indefinitely.	Highly flammable when over 50% ABV and dangerous to heat except in controlled environments. Somewhat expensive. Cannot be used for some people with addiction or even allergic conditions. Will not extract some constituents.

Pros and Cons of Extraction Solvents for Herbal Medicine Making

Solvent	Advantages	Disadvantages
Glycerin	Excellent for stabilizing precipitates in multifractional extracts (see here). Sweet flavor. Has extraction capabilities beyond those of water and/or alcohol. Good substitute for alcohol when alcohol cannot be used. Can be mixed with oil for topical use.	At least 80% concentration is required for long-term preservation. Viscous, messy, and not easy to strain. Will corrode metal lids. Expensive, particularly when bought in small quantities.

Pros and Cons of Extraction Solvents for Herbal Medicine Making

Solvent	Advantages	Disadvantages
Honey	Sweet flavor. Wound-healing properties; can be useful topically. With heat and time, it works extremely well to extract both polar and nonpolar constituents. Also useful in oil mixtures as an added extraction solvent to substitute for water. I prefer to use honey in conjunction with other solvents in a multifractional extraction.	Messy to work with and store for field use. At least 80 to 90% concentration is required (if mixed with water) for long-term preservation. Best if used in mixtures (e.g., with oil, glycerin, or alcohol) rather than by itself. Expensive (for good quality).

Pros and Cons of Extraction Solvents for Herbal Medicine Making

Solvent	Advantages	Disadvantages
Vegetable oil	Can be heated easily and is a good solvent, especially for nonpolar constituents. Typically the best base for topical applications for the skin and some mucosa (e.g., nasya oil).	Messy to work with. Difficult to preserve for more than a few years and must be checked for rancidity.

Pros and Cons of Extraction Solvents for Herbal Medicine Making

Solvent	Advantages	Disadvantages
Vinegar	Excellent for extracting nutrients from herbs. Sour taste offsets the sweetness of honey and/or glycerin in herbal mixtures (oxymels).Excellent for lowering pH, which enhances the extraction of some constituents.	Not a long-term preservative by itself (it will keep for 1 to 2 years maximum). The flavor can be too strong for it to be taken by itself. Cannot help with extractions that require a neutral or alkaline/base solvent. Will corrode metal lids.

Pros and Cons of Extraction Solvents for Herbal Medicine Making

Solvent	Advantages	Disadvantages
Isopropyl alcohol	Very low evaporation temperature makes it good for alcohol salves and liniments. Dilates blood vessels on the skin, so it is a good choice for liniments. Disinfectant properties. Inexpensive. A good long-term preservative.	For external use only; it is toxic if taken internally. Should not be applied to broken skin. Requires adequate ventilation when being heated (i.e., in alcohol salves). Highly flammable.

PREPARING HERBS FOR USE

To work with herbs in any practical manner we must prepare them in a way that allows us to store, dose, and administer them. There are many methods of preparing herbs, and the

techniques can be learned fairly quickly. Working directly with herbs can be exciting but challenging.

My advice is to think of this part of herbal medicine like you would think about learning new ways of cooking or preparing food. Don't expect perfection or be disappointed if things don't turn out exactly the way they should the first few times. Learn as you go, make notes to help yourself remember what works well and what doesn't work so well, and enjoy yourself!

Let's begin with a discussion of using fresh versus dried herbs.

USING FRESH HERBS

Eating a freshly picked herb is probably the simplest manner of preparation, but that's not always possible, medicinally appropriate, or even safe. In some cases, for example, herbs are toxic if consumed, or they must be dried to reduce the amount of a toxic constituent. Nevertheless, in many situations using the fresh herb is fine, and often it is the most potent form of the herb. We might prepare fresh herbs in a poultice, a tincture, or a salve. Of course, our ability to work with any fresh herb is limited by its availability in our immediate environment at any particular time of year.

USING DRIED HERBS

If you buy them in bulk, dried herbs usually come in one of three forms: whole, cut and sifted (usually broken into pieces

about the size of a raisin), or powdered (ground into varying degrees of fineness).

If you are harvesting and drying your own herbs, be sure that there is a consistent flow of dry, room-temperature air around them. Any moisture trapped in a clump of leaves, roots, or other plant parts will encourage mold. To dry the aerial parts (leaves, stems, flowers), hang the plants upside down indoors (in a dry area free from dust) in clusters that are no thicker at the stem than two or three fingers' width. You can also spread aerial parts, roots, fruits, and other plant parts on screens or racks to dry them; again, sufficient airflow is key. This process will take longer in a more humid climate.

Alternatively, herbs can be dried in a food dehydrator at a very low temperature (90°F/32°C or less). I personally do not use food dehydrators for drying any herbs except those that are extremely wet (like prickly pear gel), but they do work and can be useful if air humidity is high.

The correct degree of dryness depends on the individual herb, but in general, we want to remove as much water as possible. Store your dried herbs in a cool environment (ideally between 50° and 70°F/10° and 21°C), in an airtight container out of direct light. I use glass canning jars. Storing a dried herb in its whole form, or slightly cut to fit in the jar, is better than grinding it finely. Grinding greatly increases the surface area, thereby increasing the rate of oxidation and hastening a decrease in potency.

From a collection of properly dried and stored herbs, you can use a variety of methods to extract constituents and prepare formulas, from steeping an infusion to making a

tincture or powdering a small quantity of herb to go into capsules.

ENCAPSULATING POWDERED HERBS

Making capsules of dried, finely ground powders is arguably the least efficient way to store and use most herbs. Encapsulated herbs have a short shelf life, unless you are freeze-drying the herbs (a process outside the scope of this book), and limited uses, given that they are designed to be taken only orally. You could, of course, break apart the capsules and then use the powder directly, whether in a tea, poultice, plaster, or some other application. But given that the encapsulation process is a bit tedious, I prefer to simply store powdered herbs in other containers.

You should be wary of purchasing herbs in encapsulated form, regardless of the brand. Recent studies have shown an alarming percentage of encapsulated herbs that do not contain the plant material they claim to contain. Recent FDA regulations may start to change this situation (one of the few good things to come from government regulation of herbs), but it is always better to buy herbs from people or companies you know you can trust and then powder and encapsulate them yourself.

To make a quantity of capsules, you'll want a mechanical encapsulator and a supply of vegetable glycerin capsules

that are the correct size for your machine.

BASIC EQUIPMENT FOR MAKING MEDICINE

With a few exceptions, making herbal medicine requires simple equipment that you probably already have in your kitchen, though you might prefer to have a separate set of tools and utensils that are used only for making medicine. The basics include measuring cups and spoons, mixing bowls in several sizes, a couple of whisks and spoons (chopsticks are also handy for mixing), a fine-mesh sieve, and a few pots and pans. A double boiler is useful, but you can make one by

putting a smaller pan or a heatproof bowl on top of another pan with water. You'll need an assortment of canning jars and storage containers, preferably glass. Your blender can do double duty, but I recommend having a dedicated coffee grinder that you use only for grinding dried herbs.

You will also need a supply of muslin or cheesecloth (the kind used for making cheese, not the loosely woven kind available in grocery stores). A digital scale for weighing herbs is very useful.

INFUSIONS AND DECOCTIONS

Infusing and decocting herbs are the simplest methods of extracting constituents because you are just soaking the herb, fresh or dried, in water. *Infusion* is a just a fancy word for tea; the result is usually drunk but also can be used in a wash, poultice, or other preparation. A decoction involves a bit more work, as you are concentrating the constituents by heating them longer and also evaporating some of the water. Decoctions can be not only drunk as a "turbo-tea," but used in a wash or poultice or as the basis for a multifractional extract (see here). Always use filtered or distilled water, not tap water, when making infusions and decoctions.

EXTRACTS: CALCULATING HERB-TO-SOLVENT RATIOS

In herbal medicine, extractions often employ a weight-to-volume ratio expressing the **weight** of the herb in proportion to the **volume** of the solvent (see more on solvents). The ratio is commonly calculated in metric values, with 1 milliliter (ml) of water weighing 1 gram.

For example, if you have 30 grams of a dried herb and want a 1:4 ratio in your extract, you would use 120 ml of solvent (30 x 4). If you wanted a 1:3 ratio, you would use 90 ml of solvent (30 x 3). This same calculation of ratio can be applied with any solvent or method. Determining a ratio is subjective calculation, but a range between 1:3 and 1:5 is considered the norm for tinctures.

There are times where a weight-to-volume ratio is not practical. Perhaps you do not have a scale, or you are working with a maceration tincture of fresh herbs or even dried herbs. If they are fresh herbs, what exact percentage of the herb is water? No two herbs are going to be precisely the same, and depending on how long it has been since you harvested, how dry and warm the air is as they wilt, and other factors, there is not going to be an exact answer that works for every plant and every maceration tincture every time.

Sometimes it is far more practical to use a volume-to-volume ratio. A good example of this is using the simplers method for a maceration tincture of fresh herbs (see here). (See also tincture ratios suggested for specific herbs in the materia medica.)

MAKING A COLD INFUSION

A cold infusion is prepared with cool (not cold) water. This method is very effective for demulcent herbs, as the cool water extracts the mucilaginous polysaccharides. It's very simple: Cut or grind the dried herb and place it in a jar, adding enough to take up about one-third of the jar's volume. Fill the jar with room-temperature water, cover with a lid, and let steep for at least 15 minutes and up to 90 minutes (an hour is usually about right), stirring or shaking occasionally. Strain and serve. You can also use a cold infusion as the base for a multifractional extract (see here).

You can store a cold infusion in the refrigerator, but as it's nothing but water and herb, mold will start growing after about 5 days. I don't keep cold infusions longer than about 3 days.

MAKING A HOT INFUSION

Making a hot infusion is like making a cup of tea: Place a teaspoon to tablespoon of dried (preferably) or fresh herb into a cup. The amount will vary depending on how strong you want the tea to be. Dried herb is best because the hot water bursts the dried plant cells and pulls the constituents directly into the infusion. Fresh herb is generally not as strong, so you will probably need to use more and go by taste depending on the herb and how fresh it is.

Now pour boiling or very hot water on top of the herb and let it steep for 5 to 10 minutes, occasionally stirring. Using a tea bag or tea ball is more convenient but not as effective as letting the herb mix freely to allow more surface area to come in contact with the hot water, releasing more medicinal effect. Strain if necessary, add lemon or honey as desired, and drink.

You can also place a dosage of tincture or glycerite into the cup (based on the normal dosage) instead of using herbs. You can store a hot infusion in the refrigerator for about 3 days; reheat before drinking to improve the taste.

MAKING A DECOCTION

A decoction is kind of like a hot infusion on steroids. The ratio of herb to water varies depending on a number of factors, but generally I use a one-to-three, by-volume ratio of herb to water (as a rough visual estimate), which would be roughly 2 cups of herb to 6 cups of water. This will produce a strong result, which is exactly what I am looking for in a decoction. You can certainly be more exact and measure the precise weight of your herb and the final volume of the water. The beauty of a decoction is that there is a lot of leeway depending on what you want to do with it. Do you want to evaporate enough water to end up with a highly concentrated 100 ml of decoction to add to a formula? Do you want to create 600 ml of an extract that is more concentrated than tea to put into the refrigerator and use for the next 3 days?

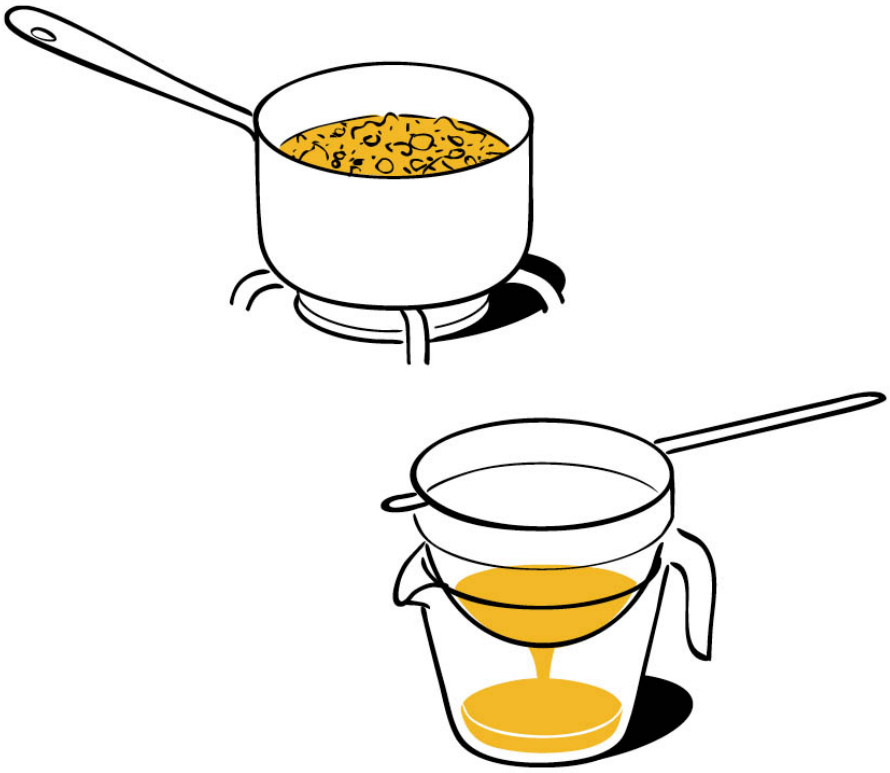
The most important thing is not to overcook your decoction by heating it at a rolling boil. Keeping it at a very low simmer

(around 160° to 190°F/71° to 88°C) for several hours, you can slowly evaporate off lots of water (if that is your goal) without damaging the final product by overheating.

To make a strong decoction, start by placing the herb into room-temperature water. If you're working with woody roots, let them soak in this water for a few hours. Then bring the water to a simmer and simmer gently, stirring often, until the volume evaporates by about one-third (if you started with 6 cups of water, you'd be left with about 4 cups). You can strain the decoction at this point or, for added potency, add enough water to bring the mixture back to its original volume and simmer it until the volume is again reduced by about one-third. Strain and use as needed.

A decoction is quite a bit stronger than an infusion, and having a good volume on hand is useful when you want to administer the herbs several times a day. As with an infusion, you can store a decoction in the refrigerator for about 3 days.

A decoction is the starting point for most multifractional extractions (see here) and syrups. It can also be used as a soak, whether on its own (such as for an injured hand or foot) or poured into a bath, where it will be diluted but still very effective.



ABOVE: *A decoction is made by simmering herbs in water, then straining out the liquid.*

HERBAL SOAKS, BATHS, AND WASHES

Soaking in an herbal decoction can be an extremely effective method of delivering herbs to a specific part of the body. Soaks are especially practical for treating the hands or feet. They're wonderful for fingernail and toenail infections (fungal or otherwise); the warm water softens the skin around nail beds, allowing the herbal constituents ready access to the infection. They also work well for abscesses and puncture wounds; the heat of the water in

combination with the softening of the tissue can help to allow the area to open and drain.

An herbal bath is a diluted version of an herbal soak, except for the whole body. You simply mix the decoction in with the bathwater — I usually add 2 or 3 cups of strong decoction for one bath. This can be useful for anything from sunburn to musculoskeletal injuries, poor circulation in the extremities, dermatitis, and more.

A decoction can also be used as a wash. It's much the same thing as a soak but involves movement of the decoction across the tissue, rather than soaking. An herbal wound wash is a good example.

TINCTURES AND GLYCERITES

A tincture is an extract of plant constituents into alcohol. There are two common methods of tincturing: maceration and percolation. Maceration is simpler, but I find percolation results in a higher- quality product when using dried herbs. A glycerite could be thought of as a maceration tincture using USP-grade glycerin that ideally is placed under heat (wet bath canning is one common method), although glycerites can also be made at room temperature.

Any ethyl alcohol from about 30 percent to 95 percent ABV (60 to 190 proof) will work for tincturing. The actual ideal

percentage used depends on a number of factors, from the plant to the targeted constituents to the plant part. However, an alcohol percentage between 40 and 60 percent ABV (80 to 120 proof) will effectively tincture most herbs. I prefer to use pure ethyl alcohol (90 to 95 percent ABV) because it is easy to dilute with distilled or filtered water down to any percentage I want, but you can also use vodka, rum, or any other alcohol that falls in the right ABV range.

ALCOHOL PERCENTAGES

Alcohol is described both by percentage and proof. The percentage given is usually by volume ("alcohol by volume" or ABV), so a bottle of 40 percent ABV alcohol, for instance, contains 40 percent alcohol and 60 percent water. "Proof" is double the alcohol percentage, meaning that a 40-percent alcohol mixture is considered 80 proof. As I understand the history, which dates back to tax laws in sixteenth-century England, 100 proof was the minimum percentage necessary to be able to soak a gunpowder pellet in the alcohol and still be able to light it, thereby "proving" it was at least 50 percent alcohol and eligible to be taxed.

MAKING A MACERATION TINCTURE

Maceration tinctures are made by mixing herbs with alcohol in a glass jar. Set the jar in a cool, dark place to steep (macerate) for at least 2 weeks, shaking it two or three times a day, then strain. The resulting liquid is your tincture, which you can store indefinitely in a well-sealed glass jar in a cool location out of the sunlight.

A fresh plant tincture is incredibly easy. Simply stuff as much fresh herb as you can into a quart-size canning jar, then fill the jar with alcohol, making sure that it completely covers the plant material. At this point you can seal the jar and let it steep. This method of tincturing is sometimes called the simplers method.

Alternatively, for a stronger tincture, dump the contents of the jar — the alcohol and fresh herb — into a blender and pulse it a few times. You don't need to chop the herb finely; just break it up into smaller pieces. Then pour everything back into the jar, top it off with more alcohol if necessary, put on the lid, and let steep. With either method, remember to shake the jar two or three times a day.

The actual ratio should come out as close to 1:1 (volume to volume) as possible, though fresh plant matter contains a lot of water content, which will dilute your solution somewhat. The goal is to get as much fresh plant matter into the jar as possible while still leaving enough room for the alcohol to flow freely through it.

A dried plant tincture is made the same way, but you cannot simply stuff the jar full of dried herb because once you add the alcohol, the herb will soak up the liquid and swell into a big

clump of herbal glop. Then there won't be room for the alcohol to flow freely around all the particles of herb.

While you can (and many do) follow the weight:volume ratio for measuring their herb and solvent, I prefer to use volume:volume ratios for dried herb maceration tinctures. This method isn't nearly as exact, but the tinctures usually end up being better in strength and quality. The ratio of a maceration tincture with dried herb by volume may be closer to 1:3 (for coarsely cut herb) to about 1:5 for powdered herb. This means one part herb for three to five parts alcohol by volume. As an example, if you have 600 ml of alcohol, you would add the equivalent of between 75 and 200 ml of cut and sifted, loosely packed herb. (See more on calculating ratios.)

Note that the amounts can be loosely estimated, especially for home use. You will get a feel for how much alcohol and herb you can mix (based on which herb you're tincturing and how fine or coarse it is) while leaving plenty of room so that all the herb material separates rather than clumps when you shake it.

THE STRONGER, THE BETTER

How strong should a maceration tincture be? As strong as you can make it. You can always dilute your tincture later if you want to.

MAKING A PERCOLATION TINCTURE

A percolation tincture is made by slowly percolating alcohol through dried herbs, using a funnel. It is not much more difficult than making a maceration tincture but does involve a little extra work. The payoff is a very high-quality tincture, with a more exact ratio between herb and solvent, and it doesn't take nearly as long to make as a maceration tincture. I can make many ounces of a high-quality percolation tincture in less than 24 hours.

You can use this method to make a quality tincture with a single herb. A usual range for the herb-to-alcohol ratio is between 1:3 and 1:5. You cannot use a percolation tincture with fresh plant material or any of the demulcent herbs; the latter generally clump together like a sponge, making it difficult for the solvent to percolate through.

SETTING UP A PERCOLATION TINCTURE

You can go to the expense of buying special glassware (such as a dropping funnel with a wide mouth), or you can modify a glass bottle with a funnel-shaped neck, as shown on these pages, using the cap of the bottle as your flow regulator.

To create the funnel, cut the bottom off an 8- to 16-ounce glass bottle with sloping shoulders and a screw top. You can cut glass using a variety of methods from an

inexpensive kit (sold in arts and crafts supply stores), to hot/cold methods, to a tile saw with a ceramic blade.

Bottles used for sparkling mineral water work well as they are generally a good funnel shape. You will also need a round, unbleached paper coffee filter and a 1-quart glass canning jar (not widemouthed).

Alternatively, you can use a piece of unbleached cotton as a stopper rather than the filter cone. Depending on the consistency of your herbs, the cotton will clog up, however, and does not give you the precise funnel effect that the filter paper will.

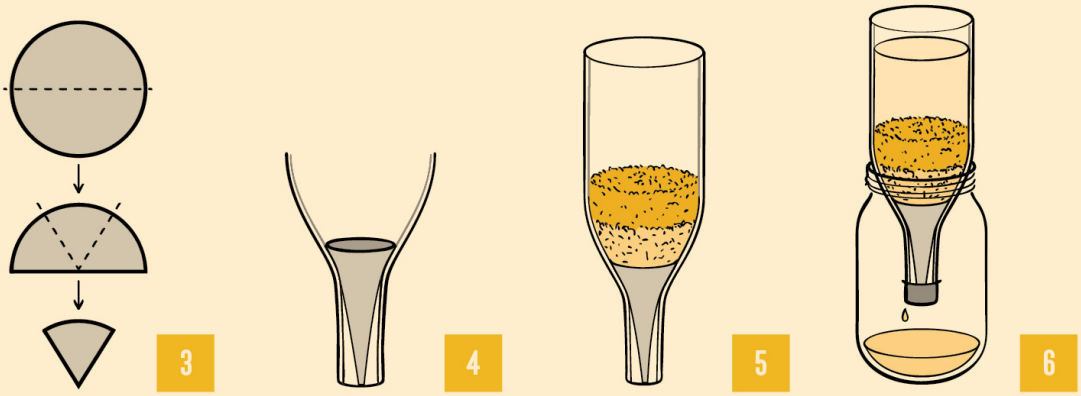
1. Grind the herbs to a fairly uniform size, then sift them through a fine-mesh sieve or splatter guard. Measure the herbs and alcohol, using a ratio anywhere from 1:3 to 1:5. Put the herbs into a bowl and moisten them with some of the alcohol you are going to tincture with. The consistency should be sticky, but not too wet.

2. Let the mixture macerate for at least 15 minutes. You can let it sit for much longer, even a day or two, but 15 minutes is enough time for the herb to soak up the moisture.

   This gives you a head start on extracting constituents into the menstruum (solvent), but the primary purpose is to give the herbs a starting point of saturation so that the final volume of your tincture

won't be lessened by the amount of liquid the herbs absorb.

3. While the herbs macerate, make a cone with the coffee filter. First, fold the filter in half, then in thirds. From the top of the cone, separate the layers of the inner fold so that the tip of the cone is sealed.



4. Remove the cap from the funnel. Set the cone inside the funnel. It should fit snugly, and the tip should descend to the point that it will be just barely in contact with the funnel's cap. Adjust the size of the cone as needed.

   Dampen the filter with alcohol and use a chopstick to smooth it against the glass all the way around so that it lies flat, with no bumps or holes. You want to prevent leakage of alcohol between the filter and the funnel.

5. Pack the ground herbs into the filter. Overpacking the bottom of the filter can result in a choked percolation that won't flow, so add the herbs in three layers, packing the first layer just lightly, the second more firmly, and tamping down the final one even more firmly. (Worst case, if the percolation won't flow, you can convert it into a maceration tincture!)

6. Place the funnel in the canning jar to catch the percolation as it drips through. Pour in the alcohol. If the funnel won't hold the full amount, just add more as the alcohol drips out over time. As the solvent descends through the bottle, you might see some bubbles rising as the herb settles. Once the tincture starts to drip out of the funnel, screw the cap back on the bottle. Pour the collected tincture back into the funnel.

   Slowly loosen the cap, adjusting as needed to achieve a rate of 1 drop every 3 to 5 seconds. If you packed the cone just right, you may find that the drip rate is sufficient to not require the cap at all.

   When all of the alcohol has passed through the funnel, your tincture is complete. This can take anywhere from several hours to overnight. Store the tincture in tightly covered glass containers out of the sunlight.

MAKING LINIMENTS

A liniment, which is intended for external use only, is made the same way as a maceration or percolation tincture but using isopropyl alcohol rather than ethyl alcohol. I use between 50 and 91 percent isopropyl alcohol for my liniments depending on the herb (this is the same as a tincture percentage described in the materia medica for each herb).

Not only is isopropyl alcohol much less expensive (you will use a lot more liniment topically than you would with a tincture taken internally), but it is a rubefacient—it acts to dilate capillaries on the skin, allowing more transdermal absorption of your herbs. Additionally, even though it absolutely works to rub an expensive ethyl alcohol tincture on your skin for bruises, sprains, and strains, you might end up smelling like a distillery.

MAKING GLYCERITES

There are several methods for creating a glycerite, but one of the easiest and quickest is wet-bath canning. For this method, the herb can be dried or fresh. Fresh herbs contain more water but using 80 percent glycerin will produce a shelf-stable product. In general, I prefer to work with dried material when making glycerites, as the dried plant cells respond well to heat and liquid to release constituents. I generally avoid using finely ground herbs, though; they can be a little more troublesome to strain because of the viscosity of the glycerin.

Note: As an alternative to heating the glycerite in a hot water bath, you can heat the jar(s) in an oven at about 200° to 225°F/93° to 107°C for 2 to 4 hours.

1. Fill the canning jar approximately one-third full with the herb.

2. For the solvent, dilute the glycerin with water in an 80:20 ratio (for example, 800 ml of glycerin and 200 ml of water). If you want to use a precise weight:volume ratio for your glycerite (see the sidebar), weigh the amount of herb in the jar (use a scale, with the empty glass jar as a tare), figure out how much solvent you'll need, and then measure it out.

   Bear in mind that 1 milliliter of glycerin/water mixture at 80/20 percent weighs approximately 1.2 grams (not 1 gram, like water and alcohol), which means you need to weigh roughly 1.2 grams of herb. For example, a 1:5 ratio by weight:volume would mean 1.2 grams of herb per 5 milliliters of glycerin. If you wanted to make 1,000 milliliters of glycerite at that ratio, it would be roughly 1,200/5 or 240 grams of herb.

   If you are not trying to get an exact weight:volume ratio, then just prepare enough glycerin/water mixture to fill the jar after the herb is put in.

3. Pour the diluted glycerin into the jar, put on the lid, and shake well.

4. Place the canning jar into a large pot. (Normally I heat several at a time using a large canning pot, but you can do one at a time.) Fill the pot with enough hot tap water to cover about three-quarters of the height of the jar. Set the pot over high heat, uncovered, and bring the water to a boil.

5. Let the water boil, adding more hot water as needed, for at least 2 hours. I generally boil the solution for about 4 hours. Every 30 to 60 minutes, carefully remove the jar from the boiling water, using oven mitts. Rotate the jar around and/or upside down a few times to mix the contents, then set it back in the pot. Steam may escape from the lid, which might expand from the pressure, so use caution.

6. Remove the jar from heat and let cool. Line a fine-mesh strainer with muslin or cheesecloth and set it over a bowl. Open the jar and pour the contents into the strainer. When most of the glycerite has drained into the bowl, use the cloth to wring out the herbs, capturing every possible drop. Then transfer the finished glycerite to a glass jar with a tight lid. Stored at a cool temperature out of the sunlight, a glycerite will keep for years.

MULTIFRACTIONAL EXTRACTS

Multifractional extracts combine two or more methods of extraction, allowing us to extract from an herb (or a combination of herbs) all the different constituents we want in our final product, even if those constituents are best extracted by different methods. This technique creates a better-quality product for many herbs, including echinacea, all mushrooms, and all mucosal vulneraries (e.g., marshmallow, prickly pear, and licorice). The multifractional extract is an excellent way to not only derive more potency from your extract but also to get a lot more final product from the same amount of herb.

Multifractional extraction can include many different solvents and is limited only by your imagination and testing (the order of extraction can be very important in many cases). My most typical process involves cold water, hot water, and alcohol (95 percent ABV), with glycerin to prevent precipitation (see the sidebar below).

1. Decide which solvents you want to work with and in what proportions. The mixture can vary depending on the herb, but a good zone for most herbs and fungi is about 50 percent water, a minimum of 25 percent alcohol, and no more than 25 percent glycerin.

   Remember that the total alcohol-by-volume percentage of your final extract should be a minimum of 20 percent for preservation; 25 to 35 percent is a better target for extended shelf life, especially for a multifractional extract. The glycerin percentage is the minimum amount of glycerin necessary to stabilize precipitation. This

varies from herb to herb but usually ranges between 10 and 25 percent.

2. Figure out the ratio you want for your herb and solvent. You can use either the weight:volume ratio or the volume:volume ratio (see here). The total volume of solvent refers to all of your solvents once they are mixed together.

   Let's look at an example: You want to make an herbal extract of marshmallow root with a 1:5 ratio of herb to solvent. Ratios on multifractional extracts usually are at least 1:5, and many of mine are as high as 1:15 or even more. In this example let's say you have 200 grams of the herb, which means you will want to end up with 1000 ml (200 x 5) of total extract when you are done. Of that 1000 ml, 500 ml (50 percent) will be water, at least 250 ml (25 percent) will be alcohol, and 250 ml (25 percent) will be glycerin.

3. Prepare the herb as a cold infusion (see here) in half the water (250 ml) for 30 to 60 minutes, shaking or stirring frequently. Strain out the herb, setting the infused cold water aside.

4. Combine the marc (the strained herb) with the remaining water (250 ml) and the glycerin (250 ml) in a pan. Mark where the level of water and glycerin mixture is in the pan, then add an extra 30 percent of the total water volume (in this case, that's about 90 ml), to compensate for the water that will evaporate as the mixture simmers.

Bring the mixture to a simmer and let simmer, stirring frequently, until the liquid in the pan is reduced to where you marked the pan. Remove from the heat and strain, setting the decoction aside.

5. Set up a glass funnel with a paper cone filter as you would for a percolation tincture (see here). Pack the marc into the filter. Pour the alcohol into the funnel— it should be 95 percent ABV; I use pure grain alcohol or sugar cane alcohol . You can either leave off the cap and just let it rinse through (if you do this, pack the funnel very tightly), or you can use the cap to regulate the flow down to 1 drop every 3 to 5 seconds, as you would for a normal percolation tincture.

6. Combine the alcohol tincture, cold-water infusion, and decoction and mix well. This is your final multifractional extract.

It is not always necessary to follow each of these steps. I use the cold-water infusion with most demulcent plants to extract those polysaccharides that clump together and don't make it into the extract if heated. For most herbs it isn't necessary to soak in room temperature water first, but it doesn't hurt. A multifractional extract can include soaking and/or cooking in apple cider vinegar, honey, wine, or other solvents depending on what you are trying to get out of the herbs. This subject takes a lot of trial and experimentation based on known

constituents, solubility, and looking at historical and empirical experience, such as Traditional Chinese Medicine.

PREVENTING PRECIPITATION

A common problem in making multifractional extracts is precipitation —the formation of solids that can occur when you combine alcohol and non-alcohol-soluble constituents. For example, if you make a decoction of echinacea flower, strain it into a glass jar, and start adding alcohol, you will very quickly see precipitation occurring.

Precipitation not only means that your extract is separating (which means that you have to shake it before using), but it also can create pockets of water. Without the preservative properties of alcohol, these pockets may eventually begin to grow mold. Precipitation (whether through alcohol or water insolubility) happens extensively with resinous herbs and ones like demulcent herbs that are high in heteropolysaccharides.

The easiest way to deal with precipitation is to add glycerin, which stabilizes the suspension. Usually a glycerin level of 10 to 25 percent in your solvent is enough to prevent precipitation. Depending on the herb and the solvents, you may still see some separation if the extract sits for a while, but the extract will remain shelf-stable and preserved.

The best time to add glycerin to the process is usually during the decoction phase, when you can mix it with the water solution. Glycerin itself has its own solvent properties, which simply adds another layer to the extraction process.

OILS AND SALVES

Oil infusions are a good method of delivery for herbs that you want to apply topically. Oil is primarily a nonpolar solvent. Although some oils have more polarity (solubility) than others, they are at the opposite end of the spectrum of polar solvency from water, alcohol, and glycerin. After infusing the oil with the herbal constituents, you can add a hardener, like beeswax, to transform the oil into a salve.

NASYA OIL

In the Ayurvedic tradition, *nasya* refers to the application of an infused oil to the mucous membranes of the nose. This technique is very effective for delivering certain types of herbal medicine into cerebral and meningeal circulation, including across the blood-brain barrier. Nasya oil is applied just a few drops at a time into the membranes inside each nostril.

WHICH OILS?

Any neutral vegetable oil can be used for infusing herbs. I most commonly use grapeseed oil, coconut oil, safflower oil, and olive oil. There is nothing wrong with mixing them together. I prefer expeller-pressed oils to ones that are extracted using solvents. Although solvent residues are supposedly completely removed, I don't like the lack of sustainability in the use of solvents like hexane, and don't trust the purity of oils that are extracted with them.

One attribute to consider is the "wetness" or "dryness" of the oil. In other words, how quickly does the oil absorb into the skin? A wet oil, like olive oil, will sit on the skin longer; a dry one, like grapeseed oil, absorbs more quickly. You will want different oils for different applications.

INFUSING OILS

To infuse an oil, we simply soak the herb in the oil and heat it. We can expose it to relatively low temperature for a long period of time, such as by letting a jar of oil and herbs sit in a paper bag on a sunny windowsill for most of the summer. Or we can expose the oil and herbs to higher temperature for a shorter period of time. By far the most effective yet simple method is to combine the oil and herbs in a slow cooker and heat to 140° to 160°F/60° to 71°C for at least 12 hours. (Check

the temperature of your cooker; not all will maintain this temperature, but ones with a “warm” setting should be fine.) I sometimes cook my oils for several days, stirring the mixture several times a day.

The oil is meant to be a preservative for the herbal constituents. Heating oils can make them less stable, but that’s generally not a concern for infusions as long as the temperature doesn’t exceed 200°F/93°C for very long. Staying below 160°F/71°C is even better.

I like to make my infused oils as strong as possible, using at least half as much total dried herb material as oil (that’s a 1:2 volume:volume ratio). Once the dried herb has soaked up the oil, it makes a pretty thick mixture, which is fine as long as there is still room for the oil to flow around all the herb matter when you stir it.

You can use fresh herbs to make infused oil, but let them wilt for 24 hours to remove a good part of the water content. Water, after all, is the bane of good oil. You don’t want your finished oil or salve to have water collect at the bottom of the jar; that will only lead to mold.

Once the oil has infused to the desired degree, let it cool and then strain it into storage containers. Store in a cool, dark location. Most oils will keep for several years, but if an oil turns rancid, you’ll be able to smell that it’s gone off and should be discarded.

PRESERVATION METHODS

The oils I use for infusions and salves — coconut, grapeseed, and olive oil — are very stable, meaning that they don't easily break down, but adding a preservative to them can extend their shelf life and guard against rancidity. You have a few choices.

Vitamin E oil. This antioxidant is a common natural preservative. I like to add about 5 drops of vitamin E oil per ounce of oil.

Essential oils. Depending on the purpose of the oil or salve, but particularly when it is intended for use on unbroken skin, several essential oils can help both preserve the oil and carry it; that is, assist in its absorption. These include camphor, cedar, cinnamon, any citrus, cloves, juniper, and tea tree. You can use anywhere from a few drops to ¼ teaspoon per 4-ounce storage container.

Add these essential oils directly to the container. I generally pour a little bit of the warm oil or salve into the container, then add the essential oil, then pour in the rest of the oil or salve. This process "stirs" the essential oils into the oil. Put the lid on right away, as essential oils will evaporate out of the warm oil.

Tincture of benzoin. This is another common natural preservative. Add it while the oil or salve is hot and leave the lid off for a few minutes to let the alcohol evaporate. I

like to add about ½ teaspoon of tincture of benzoin per 4 ounces of oil.

MAKING SALVES

A salve is simply an infused oil in a more solid, spreadable form, which is easier to carry and to apply in some situations. Beeswax works well as a hardener. Chop up the beeswax and combine it with the oil in a ratio of one part beeswax to between five and eight parts oil, depending on how soft or stiff you want the final product to be.

Warm the mixture over low heat (a double boiler works well), stirring continuously, until the beeswax is melted. Then immediately pour the mixture into storage containers. Let cool, then seal and store in a cool, dark location.

ETHYL AND ALCOHOL SALVES

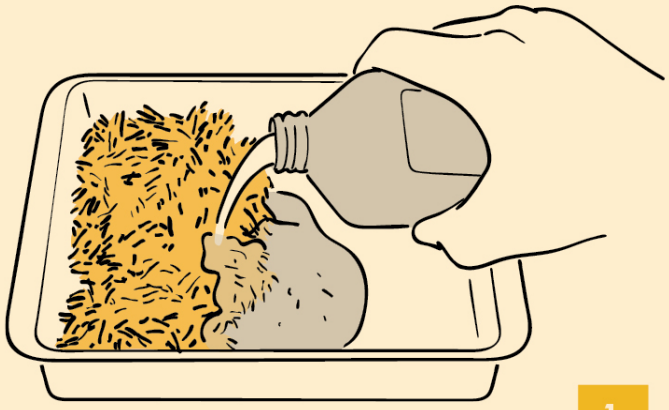
A somewhat more involved method of infusion is to make an ethyl or isopropyl salve. This involves extracting the alcohol-soluble constituents (such as some of the alkaloids found in resins and balsams) in an alcohol solvent and then combining that extract with oil and heating it to evaporate the alcohol. You'll need to use a high-ABV alcohol, such as 95 percent ABV ethyl alcohol (e.g., Everclear) or 91 percent (or even 99 percent) ABV isopropyl alcohol.

Add beeswax at the end, after all of the alcohol is evaporated out and the oil has infused long enough, as per the previous instructions.

Caution: Prepare salves in a well-ventilated area, as the fumes from the evaporating alcohol are quite strong.

HOW TO MAKE ETHYL AND ALCOHOL SALVES

1. Put the herb in a flat dish or pan with just enough alcohol to supersaturate it. This means that you should be able to see a little bit of alcohol collecting on the bottom of the container. Think of a sponge that is soaked with enough water to drip if you hold it up by a corner. Don't use a jar or other tall container because you want the maximum immersion in the minimum amount of alcohol. Let the herb soak for at least 20 minutes and up to a few hours.



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2. Heat the oil to about 110°F/43°C. Pour the warm oil into a blender and add the alcohol-saturated herb (including the alcohol). Blend for several minutes.

2

3. Pour the herb mixture into a slow cooker or double boiler and heat over the lowest heat possible to evaporate the alcohol. The mixture will start to bubble at a relatively low temperature — especially if you've used isopropyl alcohol — and you will smell the alcohol evaporating.

Stir frequently to move alcohol from the herbs to the surface of the oil. When the bubbling stops and you no longer smell alcohol, most of the alcohol is gone. I find it usually takes at least 8 hours to fully evaporate the alcohol.

4. When the oil is ready, melt beeswax as described in Making Salves above. Strain the oil and mix it with the melted beeswax. Immediately pour the mixture into storage containers. Let cool, then seal and store in a cool, dark location.

OTHER VITAL COMPONENTS OF HERBAL MEDICINE

An important part of making and using herbal medicine is learning to incorporate key healing substances that aren't plants themselves, but that come from natural, organic processes. The four most potent and widely useful are charcoal, clay, honey, and propolis. Your home or field pharmacy and first-aid kit should include all of them.

ACTIVATED CHARCOAL

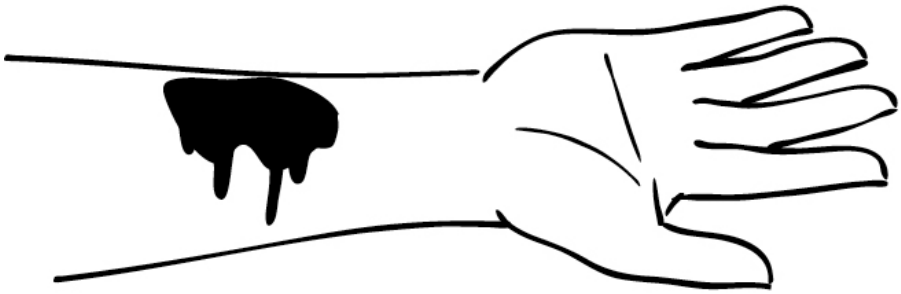
Activated charcoal has been exposed to very high heat, which increases its surface area and allows it to adsorb nonpolar molecules and compounds to its surface. Think of it as an incredibly porous microsponge. When charcoal comes into contact with infected tissue, it bonds with dead tissue, bacteria, and toxins. As the charcoal is applied, rinsed off, and reapplied,

it cleans the surface of the wound. This means that your body has a much better chance of establishing healthy cellular growth in that region.

Charcoal also adsorbs toxins (including those responsible for food poisoning) from the stomach and digestive tract. So if you ingest nonpolar poison (that is, a toxin that is not an acid or a base, and not alcohol) and need to clean it out, you can ingest a large amount of charcoal (approximately 1 to 2 grams per kilogram of body weight) and it will move through your gut, picking up toxins or poison along the way.

It will not harm you, although excessive amounts can cause constipation, and this should especially be noted when using it with children. It will turn poop black, but it does no harm to the gut during its passage.

Charcoal does not absorb from the gut into the bloodstream, so it does not pick up toxins from the blood. Claims that it is a blood cleanser or a treatment for a venomous snakebite are fiction.



ABOVE: *A charcoal slurry is an effective method of cleaning infected tissue.*

How to Use It

I always carry charcoal as a powder (charcoal capsules work fine but it's a hassle to break them open). For internal use, I mix the charcoal powder with distilled or filtered water until it is a slurry. The taste is neutral; it's sort of like drinking a tofu smoothie. Don't mix anything else into the slurry. If you mix herbs and charcoal together, the charcoal will bind the herbs and the herbs will make the charcoal dirty so that neither one will work correctly. Charcoal should always be used by itself.

For external use, the same slurry can be poured directly into the wound. The thinner the solution is, the better it will be able to flow into spaces in the wound. It will dry relatively quickly, so it's fine to have it on the watery side. The most important point is that the charcoal must come into contact with the affected tissue in order to be effective.

Leave the charcoal on the wound for 30 minutes to 2 hours, depending on the degree of infection (more infection means replacing the charcoal more often). If it is not possible to keep the body part still, you can place a dressing on top and wrap with an elastic bandage to keep it protected and clean. When ready, rinse it off with clean water. The tissue where charcoal has been will be blackened, but that is fine. Rinse it off as well as you can, examine the wound to note any tissue changes, and then apply another charcoal plaster.

You should notice a change in the state of the tissue (in particular if the tissue is infected) within a matter of two or three plaster changes. Once the tissue is starting to look healthy again, clean off the last plaster of charcoal and start working with herbs. Charcoal does not help the tissue heal. It is an amazing cleaner, but that is its sole purpose in managing infection.

BENTONITE CLAY

Bentonite is a very fine mineral clay. There are several different types, usually named after the dominant mineral present (e.g., sodium bentonite, calcium bentonite, and so on). Calcium bentonite is generally a far better choice, for both internal and external use, than sodium bentonite due to the water retention and pH differences between the two.

Bentonite clay is made up primarily of aluminum, silicon, and oxygen, and because of this has a very strong anionic (negative) electrical charge. It is highly adsorbent, which makes it very effective at pulling toxins out of wounds. High-

quality bentonite is especially useful for poison oak and ivy rashes, fire ant bites, bee and scorpion stings, and similar issues.

How to Use It

Bentonite needs to be mixed with water to be effective. Mix it preferably with distilled or purified water, then apply it as a paste to the skin or affected area. Follow the same process as with activated charcoal. If the patient must be moved, then you can place a dressing on the wound with a bandage over it. Clean and rinse the area every 30 minutes to few hours.

RAW HONEY

Raw honey comes straight from the hive and has not been heat-treated or (ideally) even filtered. A lot of commercial honey is glorified corn syrup or is mixed from a variety of sources. For medicinal purposes, use only single-source honey, preferably one from a local producer.

Honey is at least bacteriostatic, if not antibacterial, meaning it is almost impossible for most types of pathogens to grow in honey, which is why it keeps practically forever. All honey contains a small amount of hydrogen peroxide, and certain types of honey are rated as to their antibacterial strength.

I prefer manuka grade 12+ honey, whose antibacterial effect can possibly be attributed to a compound called methylglyoxal, but I have found local raw honey to be

extremely effective as well. However, since I use herbs with the honey, I am not as interested in its antibacterial properties as its effectiveness as a solvent for the herbs, while also keeping wounds moist and promoting healing. (See more about honey.)

How to Use It

Honey is one of my favorite mediums to mix with herbs for wound care, such as in herbal plasters for burns, and its only downside is that sometimes it can contribute to too much moisture around the wound. When that happens, simply let the wound dry a little before reapplying the honey. It is also an excellent medium for infusing herbs to be taken internally, such as making garlic honey for strep throat.

Honey can be applied directly to the skin or a wound (after cleaning). It can be used by itself, infused with herbs, or even mixed with powdered herbs and applied as a plaster.

Honey will generally absorb into the skin and tissue of wound areas and is especially useful for burns and wounds that are too dry. Since it will moisturize a wound area, I don't apply it to wounds that are already too wet (macerated tissue) without letting them dry out first. Since honey absorbs, it doesn't need to be cleaned off the wound the same way that charcoal or bentonite clay do. However, the wound should be checked every 12 to 24 hours, depending on existing infection concerns, and if the area around the wound is still sticky with honey it can be gently rinsed clean before applying more.

HOW TO INFUSE HONEY

I infuse herbs in honey in a slow cooker or double boiler at low to medium temperature (130°F to 160°F/55°C to 71°C) for 4 to 6 hours. The mixture is strained while hot. After cooling, it can be blended into a multifractional extract, or added during the decoction step of a multifractional extraction to amplify the solvent effectiveness of the water decoction itself.

PROPOLIS

Propolis is a type of resin collected from trees by bees and used to protect the hive from bacterial and fungal growth, as well as to seal in or protect the queen from illness, such as a virus. It is composed of balsams, waxes, essential oils, pollen, and other botanical compounds.

Propolis is not water soluble and must be tinctured in very strong (90+ percent) alcohol. It is extremely resinous and will make a mess on anything it touches if not in an alcohol solution. Putting it raw in the mouth or on the gums will result in a resin on the teeth that will take some time to wear off.

Propolis tincture is like an antibacterial, antifungal, antiviral liquid bandage that metabolizes slowly into the tissue. I use it to seal herbs into an area of mucosa or even directly on the skin; it keeps them in contact with the affected tissue for a

long period of time. It's especially useful in this regard as a spray or drop onto strep throat, herpes outbreaks, and other viral or bacterial infections of the mucosa or skin.

How to Use It

I prepare propolis as a maceration tincture in 95 percent ABV alcohol. It will not blend with tinctures that have a lower alcohol concentration.

Propolis tincture can be dropped or sprayed onto tissues as needed. It works well as a liquid bandage to seal in another tincture or even a small plaster on the mucosa or skin. Or it can be used directly by itself as an antimicrobial liquid bandage.

One of my favorite uses of propolis is for treating canker sores (aphthous ulcers). Mix ground licorice root with the propolis tincture into a sticky sludge and then pack it into the ulcer. It will stay in place for hours, and the canker sore will heal very rapidly.

USING HERBAL PREPARATIONS

Now that you have an understanding of how make herbal preparations, let's put them to use! There are many ways to administer a preparation into or onto the body. The critical factor is to get the herb to the tissue we are trying to affect, whether that means applying a preparation that can be

absorbed across the skin, through the mucous membranes, through the gut, or somewhere else. Here are the most common ways I administer herbal medicine.

MAKING AN ISOTONIC HERBAL SOLUTION

Isotonic saline, sometimes called “normal” saline, is a simple solution of salt and water that has the same sodium content as the fluids of the body. The goal is 0.9 percent salinity, and this is very closely approximated by a ratio of 1 teaspoon of salt per quart of water.

Sometimes it’s important that an herbal solution be isotonic — for example, if we were going to apply it to the membranes of the eyes or nose. We can easily make an isotonic herbal solution using the same proportion of salt as we would for normal saline.

1. Make an infusion or decoction with your herbs (see here) and then measure out 1 cup. Alternatively, you can pour 1 cup of boiling water into a container and then add about 1 teaspoon of tincture or glycerite.

2. Add ¼ teaspoon of salt to the water and stir to dissolve. Use fine table salt, preferably noniodized. “Neti salt” is an extra-pure salt designed for this purpose.

3. Let the solution cool to body temperature. Stir or shake well before using.

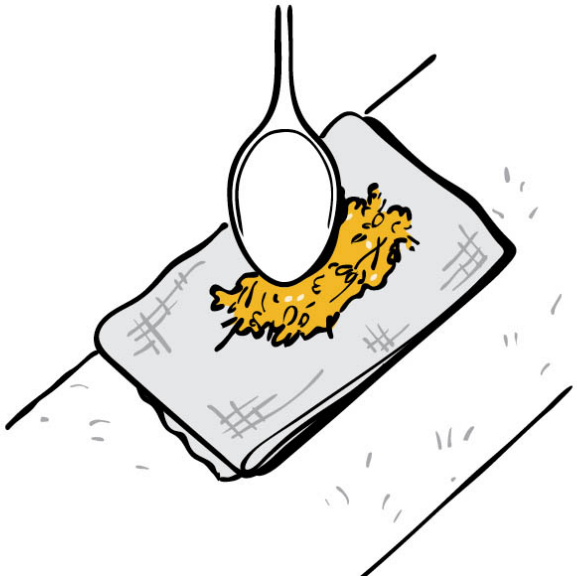
POULTICES AND PLASTERS

Throughout the world of herbal medicine, definitions of specific terms can vary from herbalist to herbalist. From my point of view, a poultice is a dampened mixture of herbs that does not necessarily come in direct contact with the skin but rather drips or soaks through some type of gauze or cloth. A plaster, in contrast, puts herbs or other material in direct contact with the skin. Both poultices and plasters can be heated or unheated, as appropriate.

MAKING POULTICES. To make a poultice, we mix the herbs with fluid (usually water), place the wet mixture between layers of absorbent cloth (such as medical gauze), and then place the material on the skin. The idea is to allow the poultice to seep into a wound or onto the skin.

Again, our goal is to bring the herb in contact with the affected tissue to effectively help the tissue heal through absorption across the skin and damaged tissue. Placing the herb directly into a wound might help in some ways, but it might also create physical irritation to the wound. Instead, we use the cloth to drip an herbal extraction into the affected tissue.

With a poultice, the solvent must be thin enough to be able to drip through the cloth. This is why water is usually the solvent of choice. You could also use normal saline (1 teaspoon of salt per quart of water).



ABOVE: *A poultice involves applying herbs to a wound through a layer of gauze.*

MAKING TINCTURE POULTICES. To make a poultice using tincture, simply soak the tincture into a gauze pad and place the pad on the skin. I normally reserve this treatment for infected wounds. While the alcohol will cause some damage at a cellular level, it bolsters the anti-infective properties of the herbs in the tincture. This approach is very useful for a bad infection in the field, such as cellulitis.

A similar poultice could be made with a glycerite but depending on the percentage of glycerin in the extract, you may need to add water to the gauze to thin it out a little bit.

TEABAG POULTICE

Green tea works very well as an astringent, antioxidant, and even antimicrobial, in a pinch, and is a decent treatment for tooth or gum infections. An easy poultice is a green tea teabag, steeped in hot water and cooled to body temperature, placed directly on a laceration or between the cheek and gum.

MAKING PLASTERS. For a plaster, you place the herb in direct contact with the skin or the damaged tissue and then cover it with damp cloth. A good example is a charcoal plaster. Charcoal must touch dirty or infected tissue in order to clean it (see more on charcoal). A poultice would limit the contact of the charcoal with the tissue, so a plaster is a better application. Mix the charcoal with (preferably distilled) water and place it directly on the affected area, where it will adsorb (adhere to) bacteria, dead tissue, and other toxins. Cover the area with a damp cloth.

Plasters are excellent to use on a closed injury, like a sprain, strain, or bruise. They also have a historical use on the chest in the case of colds, flus, and even much more serious respiratory issues such as pneumonia or pleurisy. For these applications, we generally would heat the herbs in the plaster — the classic "mustard" plaster is an example.

A plaster can use other solvents besides water, such as honey. Mixing herbs, honey, and vitamin E oil creates a very effective plaster to treat burns. Honey plasters work well on wounds, ulcers, and abrasions as well.

Other solvents we can use with herbs for a plaster — depending on the injury and location on the body — are aloe gel, the goo from prickly pear pads, apple cider vinegar, burn treatment gel, normal saline, propolis, tincture, glycerite, and vegetable oil.

CASTOR OIL PACKS

A castor oil pack is sort of like a cross between a compress, a plaster, and a poultice. The oil will have its greatest benefit when infused with herbs appropriate to the issue being treated (see details on how to infuse an oil). Castor oil packs can be very useful for helping remodel scar tissue, healing deep musculoskeletal injuries, and loosening up sluggish bowels.

Soak a cloth in infused castor oil, put it on the skin, and cover the cloth with plastic and/or additional cloth to keep it from being too messy. I normally use flannel or wool in a castor oil pack because they wick the oil well onto and into the skin, but any kind of cloth will work in a pinch. Apply heat — a hot water bottle, electric blanket, or heating pad — for 15 to 30 minutes to encourage the skin's absorption of the infused oil.

COMPRESSES

A compress is a cloth that has been soaked in an herbal decoction and is applied directly to the skin. It can be hot or cold, depending on the goal. Hot compresses are sometimes called fomentations. Compresses are gentle, making them

especially useful on sensitive areas of the body, such as the face or eyes. You might use them to treat conjunctivitis, sties, facial skin rashes, fever blisters, herpes sores, or shingles outbreaks.

To make a compress, first make an herbal decoction or infusion. Keep the decoction or infusion warm if you are planning on using warm compresses. Dip a cloth (washrags and towels work well) and wring it out gently so that it is damp but still dripping slowly. Fold as necessary and place over the skin.

To keep the compress warm, you can apply heat — a hot water bottle, electric blanket, or heating pad — over it for 15 to 30 minutes, or you can dip the cloth back into the warm decoction every 5 to 10 minutes.

GARLIC SOCKS

Garlic “socks” work like a plaster, with the garlic plastered directly on the feet. This method of letting an herb soak into the bloodstream through the feet is particularly useful for issues of the lower extremities. I have used garlic socks successfully as part of treatment protocol for cellulitis in the lower legs, for instance. You could also use them to treat foot and toenail fungus, infections of the lower extremities, ringworm on the lower extremities, and issues related to poor circulation.

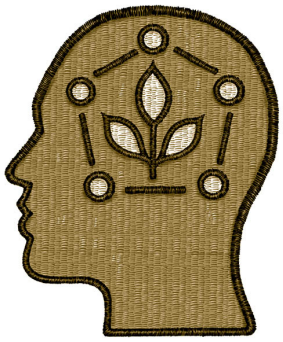
To get started, crush two or three cloves of garlic and mix them with a small amount of vegetable oil to create a

paste. Garlic can burn the skin, but the oil alleviates this effect. Rub the mixture over the soles of the feet, where the skin is thicker. Put on socks and wear them for at least a few hours while staying off your feet. Pay attention to how it feels. If there is any sensation of burning, take off the socks and wash the oil off your feet.

Do not apply garlic socks to anyone with limited sensation in their extremities (e.g., nerve damage due to diabetes) who might not be able to tell if the oils from garlic are too hot for their skin.

You will know that the garlic socks are effective because you (or your patient) will have garlic breath within a few hours of putting them on. This is because the sulfur-containing compounds (like allicin) are absorbed into the bloodstream and excreted through the respiratory tract.

CHAPTER 6
CREATING HERBAL FORMULAS



An herbal remedy made with just one herb is called a simple. While many herbs are effective taken alone, making a formula with a number of different herbs maximizes the healing benefit from all of the herbs. This is because herbs have synergistic effects when combined. In almost every case, this synergy is very helpful, due in part to the multiple effects that herbs have on different tissues and organs.

When combining herbs, we can take advantage of these synergistic effects, by, for example, boosting two less potent constituents to strengthen the overall effect of the formula. Another advantage is that we can ameliorate the toxicity of certain constituents. In general, a formula is not only more effective than taking a simple, or single herb, but it also allows a person to take the herbs for a longer period of time to greater effect without the worry of accumulating toxicity over time.

There are many different approaches to creating formulas. Some are based on energetic principles, some rely on folk or traditional principles, and some try to emulate the pharmacological approach, substituting plants (or their active constituents) for drugs. While this topic can be a bit overwhelming when you are new to using herbs, it doesn't have to be. Creating a formula can be as simple as combining equal amounts of three or four plants that have similar benefits for a health condition you want to address.

MAPPING OUT A FORMULA

When I am formulating a protocol, I use a mapping system to create an appropriate formula. It works like this:

- Ascertain a general picture of the problem by taking a history and doing a physical exam.
- Determine the tissue and organ systems that need treatment to come into balance. Often more than one system is involved.
- Create a chart that maps appropriate herbs and their effects on the targeted systems.
- Use the chart to develop an herbal formula.

While anyone can use this method, you can see how an understanding of pathophysiology from an herbalist's perspective will help you define both the condition and the herbs that will be of benefit.

EXAMPLE: STREP THROAT

Strep throat is a serious bacterial infection. Under normal conditions, you should seek higher medical care for this illness. If the infection is not treated fully, it can come back years later to attack other tissue, such as the heart. Western medicine typically prescribes antibiotic treatment.

However, if higher medical care and antibiotics are not available (or a person absolutely refuses to seek higher care), is it possible to successfully treat a serious case of strep throat? I can say from my own experience that it is absolutely possible, and successful herbal attention should result in symptomatic improvement within 24 hours. Strep throat is a red flag condition that should always be referred to higher care if possible, but here is an example of how to approach the problem using herbal medicine.

Clearly antibacterial herbs are necessary, but they will not be effective on their own. We also need to support the mucosa, the lymph and immune systems, and the body's systems of detoxification and elimination (namely, the liver and kidneys).

Let's create a table, using these targeted areas as column heads (see example). Now, looking at the columns, we can discuss what we're trying to accomplish from the perspective of treating strep throat.

ANTIBACTERIAL EFFECT will target the pharynx, as we want to attack the opportunistic colonization of that organ by pathogenic bacteria. In Western medicine, attacking the pathogenic bacteria is normally the first (and often only) treatment for any type of bacterial infection. With herbal medicine, on its own or in conjunction with pharmaceuticals, we take a broader view. We may want to consider whether we should address biofilms (see here), which protect microorganisms against the immune system and antibiotics, or bacterial drug resistance. There are many herbs that help break up biofilms as well as ones that inhibit bacteria's ability to resist antibiotic constituents.

MUCOSAL SUPPORT will involve mucosal vulneraries, or herbs that protect and soothe the mucosa. Mucosal vulneraries are among the most useful herbs when we're dealing with any kind of infection, at least in the initial stages. With them, we can strengthen and support not only the mucosa but also the submucosal lymph tissue. In strep throat, the actual site of infection is the back of the pharynx, causing what is commonly referred to as pharyngitis. We'll want to target this area with mucosal support.

LYMPH AND IMMUNE SUPPORT means stimulating the movement of lymph itself while also increasing white blood cell activity. Strep throat commonly causes swollen, painful lymph nodes (lymphadenopathy), particularly under the jaw. Stimulating the movement and drainage of the lymph supports the immune system and assists in breaking down and draining toxins, specifically reducing the painful swelling.

DETOXIFICATION AND ELIMINATION refer to supporting the function of the liver and kidneys as they flush toxins from the body.

Now that we've defined the columns, we can fill them in with herbs that meet these goals. (Note: For ease of reading within charts, the Latin name is only given for herbs that do not appear in the materia medica.)

Each herb will serve the given function of its column relatively well. Note that we're looking down the columns, not across the rows. That is, we aren't considering any herb in relation to the ones next to it. In addition, I am not suggesting that we want to use every herb in this table. We may use one from

each column to create a formula, or we may need to break them into separate protocols and have more than one formula. For instance, the mucosal support herbs can be used almost nonstop throughout the day to coat and soothe the back of the throat, so we can prepare them as lozenges, syrups, or sprays. The lymph-moving herbs need to be taken only a few times per day, ideally using tincture, and the same is true for the herbs to support detoxification and elimination, so all of those herbs could be combined in a single formula.

Strep throat is a dangerous, acute infection, so the dosage and frequency of the formulas in our treatment protocol should be high. That fact should help point out the difference between pharmaceuticals and herbs in regard to the work that has to be done with herbs to match the effect of antibiotics.

MAPPING OUT A FORMULA

Step 1

Strep Throat Protocol: Target Actions			
Antibacterial Effect	Mucosal Support	Lymph and Immune Support	Detoxification and Elimination

Step 2

Strep Throat Protocol: Potential Herbs			
Antibacterial Effect	Mucosal Support	Lymph and Immune Support	Detoxification and Elimination

Strep Throat Protocol: Potential Herbs

Antibacterial Effect	Mucosal Support	Lymph and Immune Support	Detoxification and Elimination
• Any berberine-containing herb (see here), such as algerita, goldenseal, or Oregon grape root • Baikal skullcap • Myrrh • Oak bark • Usnea	• Comfrey leaf • Elm bark • Licorice root • Marshmallow root • Prickly pear flower	• Echinacea flower • Poke root • Red clover flower (*Trifolium pratense*) • Red root • Spilanthes flower/leaf	• Celery seed (*Apium graveolens*) • Chicory root (*Cichorium intybus*) • Dandelion root • Milk thistle • Parsley

Step 3

Strep Throat Protocol: Herbal Formulas

Antibacterial Effect	Mucosal Support	Lymph and Immune Support	Detoxification and Elimination

Strep Throat Protocol: Herbal Formulas			
Antibacterial Effect	Mucosal Support	Lymph and Immune Support	Detoxification and Elimination
• Any berberine-containing herb • Baikal skullcap • Myrrh • Oak bark • Usnea	• Marshmallow root • Prickly pear flower	• Echinacea flower • Poke root • Red clover flower (*Trifolium pratense*) • Red root • Spilanthes flower/leaf	• Dandelion • Milk thistle • Parsley
Make a tincture using roughly equal parts of all the herbs. Gargle and then swallow 1–2 teaspoons every 2–3 hours.	Make a cold infusion using roughly equal parts of the herbs. Gargle and then swallow 1–2 tablespoons every hour.	Make a tincture using roughly equal parts of all the herbs. Take 1–2 teaspoons twice per day (morning and evening).	

EXAMPLE: DIGESTIVE ISSUES

Herbs have far more than one effect. As an example, chamomile (*Matricaria recutita*) can be a light sedative. It can help with the pain and inflammation of an insect sting. It can soothe digestion, mild nausea, and stomach inflammation. It can help ease the discomfort of some types of headaches. It can help reduce inflammation around the eye or eyelid, and much more. So, when we map out the herbs we might use to address a particular health

condition, we must consider the overlap of herbal effects across different organs, tissue, and cells.

Let's use an example where a person has a number of chronic symptoms related to the gut and digestion: gut pain, bloating, digestive issues, and some acid reflux after certain meals, combined with a lot of stress. Of course, there is much more that could be said about the diagnosis of these symptoms than can be tackled in detail here. However, let's use this symptom picture as a framework to talk about how the overlap of herbal effects can affect our formulations.

If we mapped out a chart targeting each of the symptoms in its own column, with the rows listing some herbs that have the appropriate effects, it might look something like the one below.

Now let's take into account the overlapping effects of these herbs and put them together within those areas of overlap.

We can see that our overlap gives us better choices to be able to formulate without using dozens of herbs. Is it realistic to make one formula that addresses the issues in columns one, two, and three (gut inflammation, liver support and stimulation, and digestion)?

Absolutely. The berberine-containing herbs offer a variety of properties, so we can pick one, such as Oregon grape root, plus another two herbs like plantain and fennel. Looking through our table, we like the way that wild yam, dandelion, and milk thistle balance out those first three columns. That makes a total of six herbs, which is a good average number of herbs in a formula. Most of my formulas contain five to seven herbs.

How about columns four (anxiety and mental stress) and five (pain)? Well, a number of herbs already cover both columns. In the first row that blocks out both columns, we see a formula that would work just fine by itself: California poppy, Jamaican dogwood, passionflower, pedicularis, Saint John's wort, skullcap, wild lettuce, and wood betony.

That number of herbs is a little bit on the large side for a formula, but there are few other things to consider. Do we want the formula to make the person sleepy? If not, then we take out passionflower. Do we even have pedicularis available? It is normally neither easy to find nor cheap, so unless we have wildcrafted it ourselves or know people who have, that herb might fall out of the formula as well.

Digestive System Protocol				
Gut Inflammation	**Liver Support and Stimulation**	**Digestive Issues**	**Anxiety and Mental Stress**	**Pain**
• Any berberine-containing herb (see here), such as algerita, goldenseal root, or Oregon grape root • Chamomile • Licorice • Marshmallow • Meadow sweet • Prickly pear flower • Wild yam	• Any berberine-containing herb • Artichoke leaf • Dandelion root • Gentian • Milk thistle • Plantain	• Any berberine-containing herb • Artichoke • Dandelion leaf • Fennel • Ginger • Hops • Horehound • Mint	• Any berberine-containing herb • Lemon balm • Linden • Passionflower • Pedicularis • Skullcap • Saint John's wort • Wood betony	• Any berberine-containing herb • California poppy • Devil's claw • Feverfew • Jamaican dogwood • Prickly ash • Prickly poppy • Wild lettuce

FINE-TUNING YOUR FORMULA

There are a few questions we should ask as we devise our formulas. First, are there any herbs that we think will *not* work well together? Though herbs are generally known to complement or even synergize with each other, there are a few that can interfere with the actions of others. Saponins, for example, can

hinder the absorption of alkaloids through the gut wall. And tannins generally bind with alkaloids.

Let's look at Oregon grape root, which contains berberine, an alkaloid with a number of useful functions. If we took oak bark, which is rich in tannins, at the same time as Oregon grape root, it is possible that the berberine would be bound and have reduced bioavailability in our body. Whether this tannin/alkaloid interference will reduce the effectiveness of our formula is debatable, but we can circumvent the issue entirely by offsetting the administration of the two herbs by a time period long enough to allow for full absorption of one before the other. Nonetheless, this concept is something else to keep in mind as we consider the herbs to use in a formula.

Another consideration is whether any of the herbs have the potential to be toxic. Have we taken that potential into consideration with the dosage and administration method? Normally, an herb's potential for toxicity is decreased by being in a multiherb formula because there is simply less of that herb per dose, and also because you can combine them with herbs that mitigate the negative effects of more toxic ones.

A final critical question is whether our patient's health creates any unique contraindications. We know that the glycyrrhizin in licorice root, for instance, can raise blood pressure. If we are planning to use licorice, we must know whether our patient has any blood pressure issues, and we must also be aware of the maximum safe dosage of licorice.

20 USEFUL FORMULAS

Now that we have covered some of the most important facets of creating formulas, let me share some of the formulas I usually keep in stock in my first-aid kit. I would certainly fine-tune these formulas for a specific patient if I had the time and resources, but generally speaking, these remedies work well for a variety of uses and a wide range of people, and I like to have them on hand.

Feel free to substitute other herbs, as appropriate, for the ones I call for in these formulas. In fact, it is important not to get too wrapped up around the idea of having to use any one particular plant. Instead, learn a wide variety of

medicinal plants that work across one or more of the phases of treatment, and constantly add and experiment with new ones. Always assume that you may not have your "ideal" medicinal plants available in the case of an acute injury or illness.

Most of the herbs in these formulas are described in detail in the materia medica.

CALCULATING DOSAGE

The dosages in the following formulas are for adults. There are many ways to talk about dosage amounts with herbs. A liquid form (tincture, glycerite, multifractional extract, and so on) is usually the easiest way to dose most herbs, with the dose traditionally given in either dropperfuls or milliliters (ml), or individual drops in the case of more toxic herbs.

However, using a dropper, which usually refers to the typical dropper-tops that one finds on bottles of liquid herbal preparation in any health food store, is very inconsistent. The size of the dropper depends on the size of the bottle, and squeezing the rubber stopper at the top of the dropper might fill the dropper one third full, or one half or even two thirds, but rarely the entire dropper.

As milliliters are also—unfortunately—a less familiar measurement in the United States, what works best for most Americans, and what I've used in this book, is to give doses by the teaspoon. For conversion simplicity, 1 teaspoon equals 5 ml. My dosages are geared toward an "average" adult size of about 155 pounds (70 kg), and most dosages tend to be between ½ and 1 teaspoon (2.5 to 5 ml).

Some Common Conversions

US	Metric
20–30 drops	1 milliliter

Some Common Conversions

US	Metric
½ teaspoon	2.5 milliliters
1 teaspoon	5 milliliters
1 tablespoon (½ ounce)	15 milliliters
⅛ cup (1 ounce)	30 milliliters
¼ cup (2 ounces)	60 milliliters
½ cup (4 ounces)	120 milliliters
1 cup (8 ounces)	240 milliliters

Dosage for Children

The dosage for children between the ages of 7 and 14 is half the adult dose; for children between the ages of 3 and 7, it is one-quarter the adult dose. Children between the ages 1 and 3 should take a dropwise dosage (using an eyedropper) calculated by multiplying the adult dose in milliliters by three.

As an example, if the adult dosage is 3 to 6 ml, the dosage for a child between 1 and 3 years of age is 9 to 18 DROPS (3 × 3 = 9, 6 × 3 = 18). For an infant under 1 year old, the dosage is the same number as the adult dosage but measured in drops instead of milliliters. So if the adult dosage is 3 to 6 ml, the infant dosage is 3 to 6 drops.

Antibacterial Formula (Broad Spectrum)

This formula can be applied topically (as a tincture) and/or taken internally to target bacterial infections (including biofilms) that aren't covered by the other more specific formulas of this chapter. It is definitely not a tasty formula; dilute it as necessary.

Ingredients	Ratio/Method/Yield	Dosage & Contraindications

Note: There is no pregnancy-safe version of this formula for internal use that will be nearly as potent. However, this formula can be applied topically to an infection for anyone, even pregnant women.

• Andrographis • Baikal skullcap • Black walnut • Dahurian angelica • Echinacea • Uva ursi • Chaparral • Black pepper **or** long pepper	**1.** Use roughly equal parts of andrographis, Baikal skullcap, black walnut, Dahurian angelica, echinacea, and uva ursi to make a tincture or glycerite. **2.** Add chaparral tincture or glycerite at a ratio of 1 drop per milliliter of the mixed formula. **3.** Add black pepper tincture or glycerite at a ratio of 1 drop per 5 ml of the mixed formula. **4.** 2 ounces (60 ml) is an adequate amount of the final tincture or glycerite to last a few weeks.	**Adult dosage:** ½–1 teaspoon, taken internally 3–5 times per day or applied topically to the infection **Contraindications:** Avoid use during pregnancy.

Note: There is no pregnancy-safe version of this formula for internal use that will be nearly as potent. However, this formula can be applied topically to an infection for anyone, even pregnant women.

Anxiety Formula

While the Sleep Formula will reduce anxiety very well, it's not so helpful for dealing with anxiety during the day, when we don't want to be sleepy. It is important to remember that an herbal formula should not be relied on to "cure" anxiety. You can take this formula daily (for up to 6 weeks), but occasional use (two to four times per week) in conjunction with working to identify and address the root causes of anxiety is the best way to work with it.

Ingredients	Ratio/Method/Yield	Dosage & Contraindications

Note: For a pregnancy-safe version, omit the kava.

• Gotu kola • Kava • Linden flower • Saint John's wort • Skullcap • Wild lettuce • Wood betony	1. Use roughly equal parts of each herb to make a tincture or glycerite. 2. 4 ounces (120 ml) is an adequate amount of tincture or glycerite to last a few weeks.	**Adult dosage:** ½–2 teaspoons as needed throughout the day to a maximum of 4 teaspoons per day **Contraindications:** Use with caution during pregnancy. Do not take daily for longer than 6 weeks without a break of equal time.
Note: For a pregnancy-safe version, omit the kava.		

Cold and Flu Formula

This formula is effective against fever and chills and can help the body fight off viral infections such as flu strains and the common cold. It is a strong immune stimulant and can also be useful for upper respiratory infections, especially of the mouth and sinuses.

Ingredients	Ratio/Method/Yield	Dosage & Contraindications

• Bee balm • Boneset • Echinacea • Elder flower and/or berry • Prickly ash • Thyme	1. Use roughly equal parts of each herb to make a tincture or glycerite. 2. 2 ounces (60 ml) is an adequate amount of tincture or glycerite to last for 1 to 2 weeks.	**Adult dosage:** ½–1 teaspoon, 3–6 times per day, as needed **Contraindications:** Use with caution during pregnancy, especially during the first trimester. This is a formula for acute care and should not be taken for more than 3 to 4 weeks at a time without a break of equal time.

Note: Many herbs can be used to treat colds and flus and can be substituted into this formula. For most upper respiratory infections, alternate doses of this formula with doses of the (acute respiratory formula), beginning as soon as the first signs or symptoms arise. For a pregnancy-safe version, substitute spilanthes for bee balm and thyme.

Eyewash Formula

Eye irritation and infection can be related to allergies and allergens, viral infection, bacterial infection, injury, and more. Having a good general eyewash formula with herbs whose benefits overlap across all of these possible causes is useful.

Ingredients	Ratio/Method/Yield	Dosage & Contraindications

Note: Keep any extra eyewash covered in the refrigerator, and use within 2 days. Bring the eyewash to room temperature before using.

• Chameleon plant • Eyebright • Marshmallow root and/or leaf • Oregon grape • Yarrow	1. Use roughly equal parts of each herb to make an isotonic herbal wash (see here). 2. 1 cup (240 ml) is an adequate amount for a couple of days of use.	**For topical use:** Fill an eyewash cup three-quarters full with the formula. Position the eye over the cup and raise the head to look slightly up. Blink and move the eye around for 15 to 20 seconds. Empty the cup and repeat as needed, from 1–10 times per day. **Contraindications:** None

Note: Keep any extra eyewash covered in the refrigerator, and use within 2 days. Bring the eyewash to room temperature before using.

Headache Formula

There are many types of headaches: stress, sinus, cluster, migraine, and so on. It's difficult to make one formula that will work for all types of headaches, but this formula addresses some of the typical causative factors behind many types of headaches.

Ingredients	Ratio/Method/Yield	Dosage & Contraindications

Note: For a pregnancy-safe version, substitute skullcap for feverfew and cramp bark for butterbur.

• Butterbur • Chamomile • Feverfew • Jamaican dogwood • Meadowsweet • Wood betony	1. Use roughly equal parts of each herb to make a tincture or glycerite. 2. 2 ounces (60 ml) is an adequate amount of tincture or glycerite to last a few weeks.	**Adult dosage:** ½–1 teaspoon, 1–5 times per day, as needed **Contraindications:** Avoid use during pregnancy.

Note: For a pregnancy-safe version, substitute skullcap for feverfew and cramp bark for butterbur.

Heartburn and Digestive Upset Formula

General reflux and digestive discomfort after eating is usually indicative of a need to alter diet and lifestyle. However, herbs can help. Although the formula can be taken after eating, it is more effective if taken about 30 minutes before each meal.

Ingredients	Ratio/Method/Yield	Dosage & Contraindications

Note: Glycerites work better than alcohol-based tinctures for some people with gastroesophageal reflux disease (GERD) because alcohol can be irritating to the intestines. However, diluting the tincture dosage in water or tea and sipping slowly usually works to soften that effect and makes alcohol-based tincture perfectly tolerable even for those with very sensitive stomachs.

• Artichoke leaf and/or root • Cardamom • Dandelion leaf and root • Gentian • Milk thistle	1. Use roughly equal parts of each herb to make a tincture or glycerite. 2. 2 ounces (60 ml) is an adequate amount of tincture or glycerite to last a few weeks.	**Adult dosage:** ½–2 teaspoons, 3 times per day, preferably 30 minutes before each meal **Contraindications:** None

Note: Glycerites work better than alcohol-based tinctures for some people with gastroesophageal reflux disease (GERD) because alcohol can be irritating to the intestines. However, diluting the tincture dosage in water or tea and sipping slowly usually works to soften that effect and makes alcohol-based tincture perfectly tolerable even for those with very sensitive stomachs.

Herpes Family Virus Formula

The herpes family of viruses, including shingles, herpes simplex virus (HSV-1, HSV-2), and more, invade nerve tissue and can cause recurring pain and outbreaks for a person's lifetime. Fortunately, there are herbs that support nerve tissue while also inhibiting herpesvirus replication. This formula is one I have had amazing success with. It is best made as a topical oil to apply before, during, and after an outbreak. It can also be made into a tincture or glycerite and taken in small doses internally during an outbreak, but it is by far most effective when used topically in the area of the outbreak.

Ingredients	Ratio/Method/Yield	Dosage & Contraindications

Note: Chaparral, self-heal, and feverfew are the most important herbs in this formula. Of those, chaparral is key; it can even be used by itself if necessary. However, the other four herbs — Chinese black cardamom, Japanese dogwood, lion's mane, and ox knee — help with nerve tissue (myelin sheath) regeneration and are critical in helping the body overcome repeated outbreaks.

• Chaparral • Chinese black cardamom • Feverfew • Japanese dogwood • Lion's mane • Ox knee • Self-heal	1. Use roughly equal parts of each herb to make an infused oil for topical use. 2. 2 ounces (60 ml) is an adequate amount of infused oil to last through several outbreaks.	**Dosage:** Apply 10–20 drops (or more, depending on the size of the outbreak) to the affected area and allow it to soak in, or gently massage it in. Wear gloves and/or wash your hands thoroughly afterward, as the virus can be transmitted to the eyes and other mucosal membranes. **Contraindications:** None

Note: Chaparral, self-heal, and feverfew are the most important herbs in this formula. Of those, chaparral is key; it can even be used by itself if necessary. However, the other four herbs — Chinese black cardamom, Japanese dogwood, lion's mane, and ox knee — help with nerve tissue (myelin sheath) regeneration and are critical in helping the body overcome repeated outbreaks.

Immune and Lymph Support Formula

This formula is designed to help support and stimulate both innate and adaptive immunity as well as increase the body's ability to flush out toxins. It is best used when you are first starting to feel sick or think that you might have been exposed to pathogens and want to boost your immunity.

Ingredients	Ratio/Method/Yield	Dosage & Contraindications

because I make a very strong extract of it. See Cautions/Contraindications.

• Astragalus • Cleavers • Dandelion root • Echinacea • Poke root • Red clover • Red root	1. Use roughly equal parts of each herb except, possibly, poke root (see the note) to make a tincture or glycerite. 2. 2 ounces (60 ml) is an adequate amount of tincture or glycerite to last several months.	**Adult dosage:** ½–1 teaspoon, 2 times per day, preferably in the morning and evening **Contraindications:** None, if taken in the dosage suggested.

Note: Poke root can be used in equal proportion to the other herbs, but I usually limit it to ½ part because I make a very strong extract of it. See Cautions/Contraindications.

Kidney Support Formula

This formula is designed to support kidney function. It can be used to enhance the Urinary Tract Infection Formula, to boost other detoxification processes, or to strengthen kidney function, such as the glomerular filtration rate, while also increasing urinary output.

Ingredients	Ratio/Method/Yield	Dosage & Contraindications

Note: Be sure to stay properly hydrated while taking this formula, as your urinary output will increase.

• Cordyceps • Corn silk • Goldenrod • Nettle root and seed • Parsley root	1. Use roughly equal parts of each herb to make a tincture or glycerite. 2. 2 ounces (60 ml) is an adequate amount of tincture or glycerite to last at least a few weeks.	**Dosage:** ½–1 teaspoon, 1–4 times per day, as needed **Contraindications:** None

Note: Be sure to stay properly hydrated while taking this formula, as your urinary output will increase.

Musculoskeletal Pain Formula (Internal)

Musculoskeletal pain can arise from a number of sources, from osteoarthritis to trauma to muscle soreness from exercise. This formula can be taken internally to help with pain in all of these situations; it offers symptomatic relief by reducing inflammation and helping relax muscle tension.

Ingredients	Ratio/Method/Yield	Dosage & Contraindications

Note: For a pregnancy-safe version, substitute wild yam for feverfew.

• Black cohosh • Devil's claw • Feverfew • Meadowsweet • Yucca root	1. Use roughly equal parts of each herb to make a tincture or glycerite. 2. 2 ounces (60 ml) is an adequate amount of tincture or glycerite to last a few weeks.	**Adult dosage:** ½–1 teaspoon, 1–4 times per day, as needed **Contraindications:** Avoid use during pregnancy.

Note: For a pregnancy-safe version, substitute wild yam for feverfew.

Musculoskeletal Pain Formula (Topical)

For relieving musculoskeletal pain, topical formulas are usually more effective than internal formulas. This formula can be prepared as a salve, an oil, or a liniment.

Ingredients	Ratio/Method/Yield	Dosage & Contraindications

Note: I prefer to percolate an isopropyl alcohol tincture for liniments, preparing each herb separately, then mixing them all except cayenne in equal amounts. I add 3 to 7 percent cayenne by volume to the mixture, depending on the strength of the cayenne tincture and how hot a person wants the liniment to be.

Musculoskeletal Pain Formula (Topical)

For relieving musculoskeletal pain, topical formulas are usually more effective than internal formulas. This formula can be prepared as a salve, an oil, or a liniment.

Ingredients	Ratio/Method/Yield	Dosage & Contraindications
• Arnica • Camphorweed • Cayenne • Elder leaf and bark • Juniper berry	1. Use roughly equal parts of each herb to make an infused oil, salve, or liniment (if you're making a liniment, see the note regarding the amount of cayenne). 2. 4–8 ounces (120–240 ml) is an adequate amount to last for several months.	**Dosage:** Apply topically as needed. **Contraindications:** Do not apply to open wounds, broken skin, or mucous membranes.
• Lobelia Note: I prefer to percolate an isopropyl alcohol tincture for liniments, preparing each herb separately, then mixing them all except cayenne in equal amounts. I add 3 to 7 percent cayenne by volume to the mixture, depending on the strength of the cayenne tincture and how hot a person wants the liniment to be.		

Musculoskeletal Pain Formula (Topical)

For relieving musculoskeletal pain, topical formulas are usually more effective than internal formulas. This formula can be prepared as a salve, an oil, or a liniment.

Ingredients	Ratio/Method/Yield	Dosage & Contraindications
• Red sage • Saint John's wort • Yarrow		

Note: I prefer to percolate an isopropyl alcohol tincture for liniments, preparing each herb separately, then mixing them all except cayenne in equal amounts. I add 3 to 7 percent cayenne by volume to the mixture, depending on the strength of the cayenne tincture and how hot a person wants the liniment to be.

Nausea Formula

This formula is useful especially for nausea from motion sickness, acute mountain sickness, anxiety, and other types of nausea not specifically related to infectious gastroenteritis or food poisoning.

Ingredients	Ratio/Method/Yield	Dosage & Contraindications

Note: A very effective pregnancy-safe version can be made by eliminating the wormwood and ginger, although many midwife herbalists permit the use of ginger in low doses during pregnancy for morning sickness.

Nausea Formula

This formula is useful especially for nausea from motion sickness, acute mountain sickness, anxiety, and other types of nausea not specifically related to infectious gastroenteritis or food poisoning.

Ingredients	Ratio/Method/Yield	Dosage & Contraindications
• Algerita leaf • Ginger • Peppermint • Spearmint • Wormwood	**1.** Use roughly equal parts of each herb to make a tincture or glycerite. **2.** 2 ounces (60 ml) is an adequate amount of tincture or glycerite to last for anywhere from a few weeks to a year or more, depending on how often it is needed.	**Adult dosage:** ½–1 teaspoon, 1–5 times per day, as needed **Contraindications:** Do not take during pregnancy.

Note: A very effective pregnancy-safe version can be made by eliminating the wormwood and ginger, although many midwife herbalists permit the use of ginger in low doses during pregnancy for morning sickness.

Poor Circulation and Heart Support Formula

This general-purpose cardiovascular formula supports circulation and heart function and can benefit everything from peripheral edema, varicose veins, and diabetic or venous ulcers to wound healing.

Ingredients	Ratio/Method/Yield	Dosage & Contraindications
• Bugleweed • Butcher's-broom • Hawthorn berry • Motherwort • Prickly ash • Red sage • Yucca root	1. Use roughly equal parts of each herb to make a tincture or glycerite. 2. 2 ounces (60 ml) is an adequate amount of tincture or glycerite to last several weeks.	**Adult dosage:** ½–1 teaspoon, 1–3 times per day **Contraindications:** None

Note: This formula can be used to help support the body in dealing symptomatically with chronic cardiovascular issues such as hypertension and congestive heart failure (early stages) but is not a "cure" for either of those conditions.

Respiratory Formula (Acute)

This formula can be used to support the upper (and lower) respiratory tract in the case of acute infection, especially viral infection. It can be taken in conjunction with the Cold and Flu Formula or it can be used by itself if a respiratory infection is suspected.

Ingredients	Ratio/Method/Yield	Dosage & Contraindications

Note: For a pregnancy- and child-safe version, substitute white horehound and mullein for arborvitae and pleurisy root.

• Arborvitae • Marshmallow • Pleurisy root • Thyme • Yerba mansa • Yerba santa	1. Use roughly equal parts of each herb to make a tincture or glycerite. 2. 2 ounces (60 ml) is an adequate amount of tincture or glycerite to last for 1 to 2 weeks.	**Adult dosage:** ½–1 teaspoon, 3–4 times per day **Contraindications:** Do not take during pregnancy. Not for children under the age of 12. This is a strong formula with medium toxicity (primarily due to the arborvitae) and should not be taken for longer than 1 to 2 weeks without a break of equal time.

Note: For a pregnancy- and child-safe version, substitute white horehound and mullein for arborvitae and pleurisy root.

Respiratory Formula (Allergy)

Respiratory allergies can cause difficulty breathing, mucous secretions, and respiratory irritation. They can exacerbate chronic respiratory diseases such as asthma and can create an internal environment that allows an infection to take hold and thrive. This formula supports the respiratory tract while also reducing the immune system responses to allergens in the respiratory tract.

Ingredients	Ratio/Method/Yield	Dosage & Contraindications

Note: For a pregnancy- and child-safe version, substitute goldenrod for butterbur.

• Butterbur • Chameleon plant • Gumweed • Licorice root • Lobelia • Nettle leaf	1. Use roughly equal parts of each herb to make a tincture or glycerite. 2. 2 ounces (60 ml) is an adequate amount of tincture or glycerite to last for 1 to 2 weeks.	**Adult dosage:** ½–1 teaspoon, 3–8 times per day, as needed **Contraindications:** Do not take during pregnancy. Butterbur contains pyrrolizidine alkaloids (see here) and should be taken only in a formula with other herbs. No formula with butterbur should be taken for longer than 6 weeks without a break of equal time. Avoid using for children.

Note: For a pregnancy- and child-safe version, substitute goldenrod for butterbur.

Skin Allergy Formula

This is an internal formula to help with acute outbreaks of skin allergies, by which I mean allergic and/or autoimmune skin conditions such as eczema, rosacea, psoriasis, and others. While the deeper causes of these skin diseases require a more holistic approach (i.e., nutrition, lifestyle, stress management), this formula is helpful to relieve acute outbreaks of these conditions.

Ingredients	Ratio/Method/Yield	Dosage & Contraindications

Note: A very effective pregnancy-safe version can be made by eliminating the Oregon grape from the formula.

• Burdock • Chameleon plant • Heartsease • Nettle leaf • Oregon grape • Red clover	1. Use roughly equal parts of each herb to make a tincture or glycerite. 2. 2 ounces (60 ml) is an adequate amount of tincture or glycerite to last for 1 to 2 weeks.	**Adult dosage:** ½–1 teaspoon, 3–4 times per day, as needed **Contraindications:** Do not take this formula during pregnancy.

Note: A very effective pregnancy-safe version can be made by eliminating the Oregon grape from the formula.

Sleep Formula

Insomnia can be related to many factors, from stress and anxiety to having too much light in the room, poor eating habits, lack of exercise, and much more. This formula will help with getting to sleep but should not be considered a "cure" for bad habits or other issues that are the reasons for the insomnia in the first place.

Ingredients	Ratio/Method/Yield	Dosage & Contraindications

Note: In my experience, Mexican hat is one of the most effective soporifics in this formula, but this herb and prickly poppy are not usually available commercially. The formula is still effective without them. For a pregnancy-safe version, omit the passionflower.

• California poppy • Hops • Mexican hat root • Passionflower • Prickly poppy • Skullcap • Wild lettuce	1. Use roughly equal parts of each herb to make a tincture or glycerite. 2. 2 ounces (60 ml) is an adequate amount of tincture or glycerite to last a few weeks.	**Adult dosage:** ½–2 teaspoons, 30 to 60 minutes before bedtime **Contraindications:** Avoid using with any sedative medications. Avoid using during pregnancy.

Note: In my experience, Mexican hat is one of the most effective soporifics in this formula, but this herb and prickly poppy are not usually available commercially. The formula is still effective without them. For a pregnancy-safe version, omit the passionflower.

Stomach Flu Formula

Stomach flu usually involves diarrhea, nausea, and vomiting. Of course, there are other causes of these symptoms and signs, from food poisoning to protozoal infection, waterborne infections, and more. In all of these cases, activated charcoal is a very good first choice of treatment. Offset the charcoal intake from the herbal formula intake by 60 to 90 minutes to prevent the charcoal from binding with your herbal constituents.

Ingredients	Ratio/Method/Yield	Dosage & Contraindications

Note: Only two herbs in this formula are considered pregnancy-safe: oak and pomegranate rind. These two herbs alone will make a decent formula for stomach flu during pregnancy.

• Any berberine-containing herb (see here) • Andrographis • Neem • Oak • Pomegranate rind • Wormwood	1. Use roughly equal parts of each herb to make a tincture or glycerite. 2. 2 ounces (60 ml) is an adequate amount of tincture or glycerite to last a few weeks.	**Adult dosage:** ½–2 teaspoons, 3 times per day, preferably 30 minutes before each meal **Contraindications:** Avoid use during pregnancy.

Note: Only two herbs in this formula are considered pregnancy-safe: oak and pomegranate rind. These two herbs alone will make a decent formula for stomach flu during pregnancy.

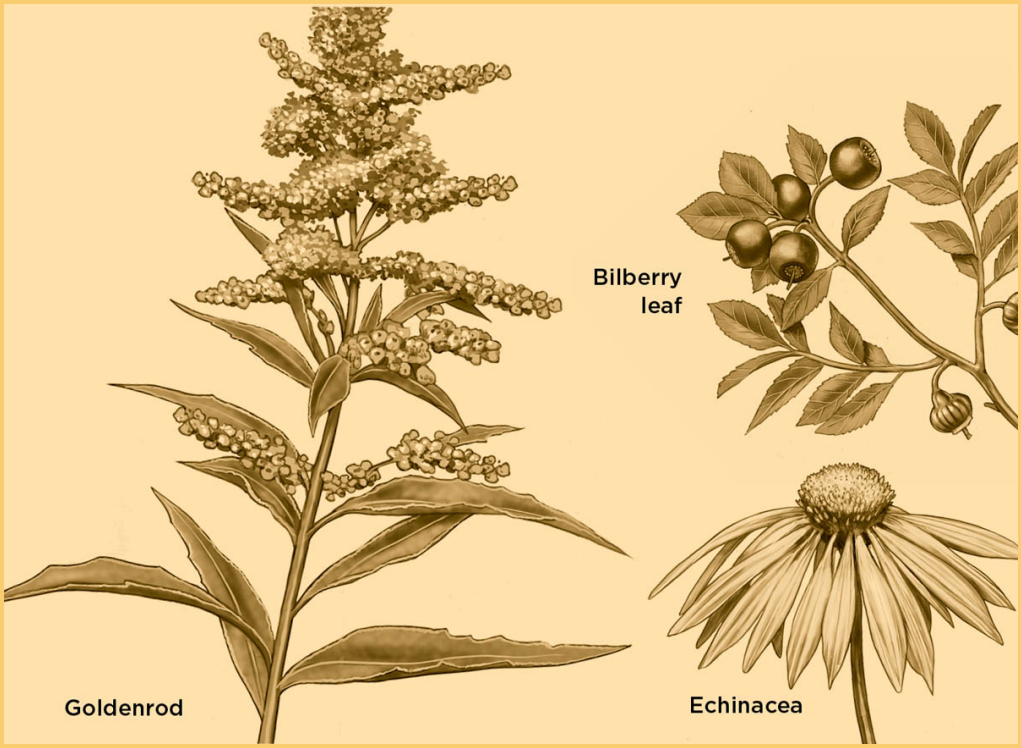
Toothache and Gum Pain Formula

An infected tooth abscess can be a serious condition that requires higher care. However, minor pain can be alleviated and a more major issue sometimes averted with early attention. This formula helps the body deal with inflammation and possible infection. It can also be used in dropwise dosage to soothe teething infants.

Ingredients	Ratio/Method/Yield	Dosage & Contraindications

Note: Neem in this small dosage and in formula is safe enough for use with caution during pregnancy. In addition to this formula, topical application of essential oils of clove and tea tree can be helpful. Dilute the oils in coconut or olive oil in a 1:10 ratio before applying dropwise to the affected area. Do not take essential oils internally.

• Bee balm • Echinacea • Neem • Prickly ash • Spilanthes	1. Use roughly equal parts of each herb to make a tincture or glycerite. 2. 1 ounce (30 ml) is an adequate amount of tincture or glycerite to last a few weeks.	**Adult dosage:** Apply 5 or 6 drops to the painful area and massage for 15 to 30 seconds, 1–6 times per day, as needed. **Contraindications:** None
Note: Neem in this small dosage and in formula is safe enough for use with caution during pregnancy. In addition to this formula, topical application of essential oils of clove and tea tree can be helpful. Dilute the oils in coconut or olive oil in a 1:10 ratio before applying dropwise to the affected area. Do not take essential oils internally.		



Urinary Tract Infection Formula

Urinary tract infections should be addressed as quickly as possible, especially in the field. Red flag indicators — meaning get to higher care immediately — include any signs of kidney infection (e.g., pyelonephritis), such as flank pain, CVA tenderness (costovertebral angle tenderness, ascertained by gentle percussion on the back over the kidneys), fever, and chills. Bladder and other lower urinary tract infections can usually be dealt with using herbs. In the case of chronic lower urinary tract infections, I like to include biofilm-busting herbs such as Baikal skullcap and uva ursi, which are included in this formula.

Ingredients	Ratio/Method/Yield	Dosage & Contraindications

Note: It is important to take this formula for 7 to 10 days, even if symptoms disappear within a few days (which they should if the formula is working). See Chapter 15 for a detailed discussion of treating UTIs.

• Baikal skullcap • Bilberry leaf • Corn silk • Echinacea • Goldenrod • Marshmallow root • Uva ursi	1. Use roughly equal parts of each herb to make a tincture or glycerite. 2. 4 ounces (120 ml) is an adequate amount of tincture or glycerite to last for 2 to 3 weeks, which is the longest this formula should need to be taken.	**Adult dosage:** 1–2 teaspoons, 3–4 times per day for 7 to 10 days, or at least 5 days beyond the point when all symptoms are gone **Contraindications:** Use with caution during pregnancy.
Note: It is important to take this formula for 7 to 10 days, even if symptoms disappear within a few days (which they should if the formula is working). See Chapter 15 for a detailed discussion of treating UTIs.		

PART 3

THE HERBAL MEDIC IN ACTION

CHAPTER 7
SHOCK

Shock is generally defined as the inability of the body to provide tissue with the oxygen that it needs to survive. Many different situations can cause shock, and we categorize types of shock based upon the cause of the shock, but in all cases the result is hypoxia (not enough oxygen).

When functioning properly, the heart pushes oxygenated blood through capillary beds into the entire body; a person's normal blood pressure indicates that this system is working. Without a functioning pump (the heart), enough fluid (blood), or the right kind of tone in the blood vessels, blood pressure will not be great enough to deliver sufficient oxygen.

The brain has a huge need for oxygen, so one of the first indicators of shock may be an altered mental state: confusion, anxiety, agitation, and/or dizziness. To compensate for an inadequate supply of oxygen, the heart beats more rapidly and breathing quickens. As shock progresses, therefore, we see a

rise in heart rate (pulse) and respiration and a *decrease* in blood pressure.

The body can continue to compensate for the lack of oxygen, but only up to a certain point. When the body can no longer keep up with the changes it must make to survive, we say that it is in a state of decompensated shock, which is much more difficult to recover from because tissue death and organ failure can ensue.

Note that shock in and of itself is not something you treat with herbs. The immediate response is to determine and address the cause of shock and work to stabilize the patient accordingly. Most patients suffering from shock need to be kept warm and quiet while you address the source of the shock. Once you have dealt with that, you can use herbs to help support the patient's recovery.

HYPOVOLEMIC SHOCK

Hypovolemic shock is caused by a lack of fluid in the blood vessels. Usually this loss of fluid is caused by bleeding—whether internal, external, or both—but it can also be related to dehydration or burns that reduce the volume of plasma in our blood.

The treatment for hypovolemic shock is to stop the leaks (i.e., bleeding) and get blood products and/or fluids into the body. This is usually done intravenously.

After the source of the shock has been addressed and the patient is stabilized, there are a few things we can consider to

help them recover more quickly. Nutrition and hydration are paramount. Iron, vitamins A and C, and several of the B vitamins are micronutrients that help tissue heal, create new red blood cells, and produce hemoglobin. A way to provide good nutritional supplementation to anyone who has lost a lot of blood is through a bone broth (see here) with lots of vegetables in it.

Additionally, the herbs listed on here are helpful in recovery from blood loss. While they could be taken in tincture form, alcohol alone won't extract all the micronutrients that are important in this situation. The best way to take most of them is as an infusion, a decoction, a capsule, or a multifractional extract made with apple cider vinegar as a part of the solvent. (You can learn more about many of these herbs in the materia medica.)

- American ginseng. An adaptogenic herb that helps nourish the respiratory tract and adrenals.
- Ashwagandha. An adaptogenic herb that likely supports the production of red blood cells.
- Astragalus. An adaptogenic herb that supports and nourishes the immune system.
- Bilberry berry. Rich with antioxidants and polyphenols; improves iron absorption and supports vascular health.
- Nettle leaf. A nourishing tonic herb that is rich in vitamins A, B, C, and K.
- Parsley. A gentle adaptogenic herb that increases circulation, increases urinary excretion of waste products, and is mildly energizing.

- Red clover. A mild immune-supportive herb that helps the body excrete waste products from physical trauma and inflammation through the lymph and urinary tract.

ABOVE: *Nettle leaf*

CARDIOGENIC SHOCK

Cardiogenic shock results from damage to the heart tissue, whether caused by a heart attack, trauma, electric shock, surgery, infection, or chronic disease. Once the source of shock has been addressed and the patient stabilized, we can turn to the following herbs for help in supporting the cardiovascular

system. (You can learn more about many of these herbs in the materia medica.)

- American ginseng. Can help increase blood flow to the heart muscle.
- Bugleweed. A supportive herb that may increase contractility strength of cardiac muscles.
- Cayenne. Can help increase coronary artery perfusion to the heart to relieve chest pain (angina) in a situation where higher medical care is unavailable.
- Hawthorn. A gentle and supportive herb that may help relax arterial smooth muscles.
- Motherwort. A supportive, antispasmodic herb that can help relax the central nervous system and ease anxiety-related cardiac issues.
- Perilla. Both the seed oil and extract are useful for cardiovascular support, particularly in cases involving high blood pressure (hypertension) and arteriosclerosis.

NEUROGENIC SHOCK

Neurogenic shock is usually a result of trauma to the central nervous system. Damage to the nervous system can cause a loss of tone to the smooth muscles of the cardiovascular system, which prevents the major blood vessels from constricting properly.

Once the source of the shock has been addressed and the patient stabilized, we can focus on using the following neurogenerative herbs to help restore the myelin sheathing around nerve tissue, reduce inflammation, and generally support the nervous system. (You can learn more about many of these herbs in the materia medica.)

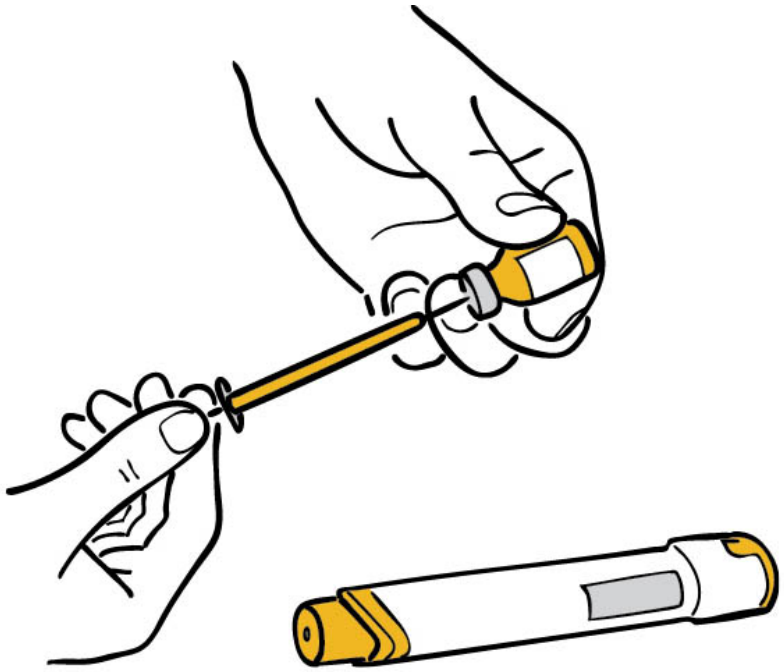
- Chinese black cardamom. Supports myelin sheath regeneration and mitochondrial energy production.
- Chinese senega root. Supports myelin sheath regeneration and nerve function.
- Japanese dogwood. Supports myelin sheath regeneration.
- Lion's mane. Supports myelin sheath regeneration and nerve function.
- Ox knee. Supports myelin sheath regeneration and reduces inflammation.
- Saint John's wort. Supports nerve function and reduces pain and inflammation.

ANAPHYLACTIC SHOCK

An extreme allergic reaction — to a bee sting, a particular food, or any number of antigens — can lead to anaphylactic shock. The primary life-threatening issue around anaphylactic shock is swelling and closure of the airway, with a secondary effect of a drop in blood pressure that is similar to neurogenic shock (dilation of blood vessels), although the cause in this case is

related to cellular messaging rather than a dysfunction in nerve tissue.

The normal treatment for anaphylaxis is epinephrine, most commonly delivered via an EpiPen system. EpiPens have become extremely expensive, however, and using a generic syringe to draw the dosage from a vial, although taking a few seconds longer (if you've practiced), is a much cheaper way to acquire the epinephrine. As a follow-on, Benadryl is often used directly after administration of the epinephrine.



ABOVE: *When epinephrine is not available, herbs can be used to counter anaphylactic shock.*

If no epinephrine is available, or in the case of an allergic reaction that is not potentially life-threatening, several herbs are highly effective for managing even severe allergic

respiratory reactions. (You can learn more about many of these herbs in the materia medica.)

- Butterbur. Inhibits leukotriene activity; excellent for slowing down respiratory inflammation.
- Gumweed. Decent smooth muscle relaxation and competent mast cell (histamine) inhibition. Very effective for managing upper respiratory wheezing and allergic reactions.
- Lobelia. An excellent respiratory smooth muscle relaxant.
- Ma huang. Contains ephedrine and pseudoephedrine that can be extracted easily into tincture form, particularly using a multifractional method. Ma huang is a potent smooth muscle relaxer and bronchodilator in the upper respiratory tract. It has a stimulating effect on the adrenergic receptor system; although not as effective as epinephrine, it is a reasonable backup.
- Nettle leaf. Good mast cell inhibition; useful for minor upper airway allergic responses.
- Silk tassel. Excellent smooth muscle relaxant for the digestive tract and airway.

For all of these herbs, consider sublingual, spray, or gargle forms of administration rather than a strictly oral dosage. The administration would therefore involve swallowing the dosage *after* letting it soak in sublingually and/or into the tissue at the back of the throat.

ABOVE: *Butterbur*

For upper airway allergic reactions, I carry a formula of all of the herbs listed here and have had amazing results for everything from acute allergic response to acute asthma attacks to full-blown anaphylaxis caught in the earliest onset (and with people who wanted to try herbs before using their EpiPen).

PSYCHOGENIC SHOCK

Psychogenic shock is like a very mild case of neurogenic shock that is caused by a psychological effect. An example would be someone fainting at the sight of blood. A sudden decrease in vascular tone and blood pressure can cause lightheadedness or dizziness, which may be accompanied by anxiety and a feeling of panic. It can also be accompanied by hyperventilation, which causes some of the same symptoms.

The key here is helping the person calm down, and a number of herbs are extremely good at this. (You can learn more about many of these herbs in the materia medica.)

- Anemone. Very useful for panic attacks and sudden onset of anxiety, such as a reaction to trauma. Use dropwise only (3–10 drops per adult dose).
- Chamomile. A gentle but effective nervine for anxiety. Most useful when formulated with other nervines.
- Kava. A very calming herb that can also cause drowsiness.
- Passionflower. Another excellent calming herb that can cause drowsiness.
- Skullcap. A tried-and-true anti-anxiety herb with a very consistent effect.
- Wild lettuce. Very good herb for relieving anxiety and pain and assisting with sleep.
- Wood betony. One of my favorite nervines for anxiety, trauma, and depression.

Most of these herbs are nervines; for more information on nervines, see the discussion of the nervous system. Sublingual administration is preferable for fastest effect; the patient can hold the dose under the tongue for 30 to 60 seconds and then swallow it.

SEPTIC SHOCK

Septic shock is a severe emergency. It usually starts with an infection in one part of the body (such as a urinary tract infection or tooth abscess) that spreads to and is circulated by the blood. A severe enough infection can cause organ failure.

Septic shock cannot be treated with herbs. A person going into septic shock can be dead in a matter of minutes, even if they are in an emergency room or intensive care unit. Outside a hospital, a patient in septic shock is probably beyond resuscitation. However, in the interest of reducing the chances of septic shock in cases of severe infection when antibiotics are not available, we have some potent antibacterial herbs to try, starting with any berberine-containing herb (see here), such as algerita, goldenseal root, or Oregon grape root. Others to consider are Baikal skullcap, black walnut, chaparral, echinacea, oak, Oregon grape leaf, and usnea. For more information on these and other antibacterial herbs, see the discussion of bacterial infections.

ABOVE: *Passionflower*

ABOVE: *Chamomile*

CHAPTER 8

WOUNDS

Open wounds are a potentially bad situation in the field because pathogens enter the tissue the moment the skin is broken. How we work with a wound can play a critical role in preventing or exacerbating infection by those pathogens.

IMMEDIATE ASSESSMENT

There's an important saying: "Treat every open wound in the field as if the victim's life depends on it." When we're looking at a wound, our immediate list of concerns is almost always fourfold:

1. Is the bleeding life- or limb-threatening?
2. Do we need to treat for shock?

3. How will we clean (irrigate) the wound?
4. What specific tissue is damaged, and how?

You can remember the four factors using the phrase “as if” as a mnemonic:

A — Amount of blood loss

S — Shock

I — Irrigation

F — Full damage assessment

Let’s work through this “as if” list.

AMOUNT OF BLOOD LOSS

Our first priority is to determine whether a bleed could be life-threatening, and if so, to stop the bleeding. What do we look for? Most wounds bleed, but how much bleeding is enough to make us decide that stopping the bleeding takes precedence over everything else?

We covered these first, critical steps in bleeding management in the first aid section (see here).

Can we use herbs to stop bleeding? Yes, many herbs are excellent and well-known styptics (substances that stop

bleeding), including yarrow, chaparral, shepherd's purse, oak, and my favorite, Canadian fleabane.

But if the wound is not life-threatening, it's better to work through the "as if" list before applying a styptic herb as if it were clotting powder, which is not necessary for a less serious bleed. For stopping a minor bleed, we need only pressure and a bandage, preferably in one neat package (i.e., a pressure dressing).

SHOCK

With any injury, and especially in the case of visible tissue damage, we must be cognizant of the risk of shock. In the case of an open wound, the two most common types of shock are hypovolemic shock due to blood loss and psychogenic shock from pain, anxiety, and psychological reactions to the injury. We discussed shock in Chapter 7; here, let's briefly review how we might handle a case of psychogenic shock caused by a laceration with minor blood loss.

To begin, ensure that the injured person is comfortable. This often means making sure they are warm, protected from the elements, and positioned comfortably. Elevating the laceration above the heart can help somewhat in reducing the pressure of bleeding as well as the pain and inflammation.

Physical shock results from a decrease in oxygen being delivered to tissue. However, there is also an underlying homeostasis (including mental and emotional balance) that can be disturbed by physical injury. When the body is chilled, hungry, wet, thirsty, tired, or exposed to any other

uncomfortable stimulus, it has to compensate for those external factors in addition to trying to achieve some type of internal homeostasis after the injury.

Sometimes all that is necessary is for the injured person to know that you are taking care of them. This is why it is so important to communicate with anyone you are assisting. Talking to them also allows you to gauge their level of consciousness and responsiveness, which is part of your primary survey (see here).

Everyone reacts differently to an injury. Most people appreciate conversation and distraction from any painful procedure; others prefer to go inward and focus on healing. Talk openly about the wound if they ask. Tell them your assessment and your concerns. Share their space as a healer and use empathy, which includes giving them information when they are ready to receive it, not hiding it from them.

Cliché phrases like “Everything is going to be okay” have no place in dealing with any aspect of a serious injury and accompanying shock. If you feel everything truly is going to be fine, be specific. Talking out loud about the injury will also help you organize your own thoughts as you work.

For a list of herbs that can help calm and ground a person in a high state of anxiety or psychogenic shock, see here.

IRRIGATION

The solution to pollution is dilution. For a medic, that means that using a solution to irrigate and clean a wound of visible contaminants minimizes the potential for infection and

encourages the tissues to heal. Note: If the wound was a life- or limb-threatening bleed that was difficult to stop, skip this step rather than breaking up clots and starting the bleeding again. Heavy bleeding itself will have helped clean out a lot of the debris.

Otherwise, once you have made sure that the injured person is doing okay (they're not shocky) and can deal with the pain of the wound being cleaned out, you need to irrigate it with some kind of wound wash. Normal saline is ideal, but all you really need is clean water. If the wound is very dirty, after irrigation you might rinse it with a decoction or infusion of antimicrobial and immune-stimulating herbs, such as:

- Any berberine-containing herbs (see here), such as algerita, goldenseal root, or Oregon grape root
- Bee balm
- Chaparral
- Echinacea
- Mesquite
- Yarrow

But you don't have to get too fancy. The primary concern is to clean the wound as soon as possible until all visible debris is gone. How you clean it will depend, in part, on what type of wound you're dealing with; see here for details.

FULL DAMAGE ASSESSMENT

While you are irrigating the wound is the perfect time to assess the damage. This means doing a thorough visual inspection of the full depth of the wound as well as nerve and muscle testing, either distally and/or proximally to the wound, as appropriate, to ensure that there is no connective tissue (i.e., tendon and/or ligament), joint, or bone involvement.

Your assessment of the wound and damage will determine how you proceed with treatment. For example, a partially torn or cut nerve, tendon, or even artery could be potentially healed with very careful care that would include immobilization and herbs that promote the healing processes (see here). However, a complete severing of any of those structures would require surgical intervention.

I once had a student in a survival course who cut the back of his hand while working with his knife but didn't let me or anyone know. He rinsed out the wound, put a wound closure strip over it, and then continued to work on his bow-drill fire. He had nicked an extensor tendon, but most likely not severed it. However, by continuing to put stress on the damaged tendon, he tore the tendon all the way through. It contracted substantially toward origin and insertion points, and he ended up having to go to a hand surgeon to fix the tendon.

That sort of damage is the reason we do an assessment. In a case like that, with a deep cut, you could check for connective tissue damage by having the injured person extend their fingers. You could check for nerve damage by seeing whether they have feeling in all their fingers. A visual inspection of the full depth of the wound would reveal the extent of vascular damage.

If you can see that the person will need surgical intervention, do *not* use herbs to speed up tissue healing. Your primary goal in this case is to keep the wound clean and free of infection to minimize the need for debridement while also preventing any further damage to the area.

A thoroughly competent damage assessment requires some basic knowledge of anatomy and physiology. However, even if you have no background in medicine, you can still clean a wound and get some idea of the damage by inspecting it.

TREATING GUNSHOT WOUNDS

Treating a gunshot wound follows the same process discussed in Chapter 2— remember the triangles? First, make sure the scene is safe enough for you to proceed without becoming a casualty yourself. Can you call for help? Can anyone at the scene help you?

Once you start working with the patient, take care of any life threats first. This means stopping any life-threatening bleeding immediately. You might need to apply a compression dressing or a tourniquet. For a sucking chest wound, you'll need to apply an occlusive dressing and make sure that the patient is able to breathe.

Check for the entrance wound *and* the exit wound. If there are entrance and exit wounds to the chest, place an occlusive dressing over both. If there are entrance and

exit wounds to an arm or a leg, be sure to bandage both wounds.

Additionally, make sure the patient is warm and that you have protected the cervical spine if you have any reason to suspect C-spine injury. Once you've completed these steps, work on a plan to evacuate the patient to higher care if higher care is not already on the way.

CLEANING AND CLOSING WOUNDS

After you've stopped any bleeding, immediate treatment of a wound centers on cleaning it and, if appropriate, closing it (versus seeking higher care for deeper injuries). For closing a wound, you have numerous options, from wound closure strips to gauze secured with elastic wrap, skin glues, and sutures, as well as a number of herbal approaches, such as poulticing. The biggest issues in the field with closing a wound—even after it has been cleaned—are ensuring that there is no empty space inside the wound (i.e., all tissue should be touching, with no gaps or tunnels) and that the wound is allowed to drain. Otherwise the risk of infection becomes far greater.

Your approach will depend on the type of wound and the extent of the damage. Let's run through some common examples.

AVULSIONS

An avulsion injury, where the skin is torn or cut away, sometimes leaving a flap of skin, can be painful and potentially dangerous in the field, depending on the depth of the avulsion. If the skin flap was removed during the accident, then it is best to treat the tissue like a partial- or full-thickness burn (depending on the depth); see Chapter 9.

If a flap of skin remains intact, we need to pull it back and clean thoroughly underneath using irrigation—again, preferably with normal saline. This process can be very painful, but in the field it is critical. During irrigation, we can also inspect to see how deep the avulsion appears. A full-thickness avulsion extends through all the layers of skin and into the subcutaneous fat. A partial-thickness avulsion involves only the layers of skin (epidermis and dermis). As in the case of a burn, a full-thickness avulsion is potentially more critical than a partial-thickness avulsion.

Our biggest concern is infection, which is why cleaning the area is so important. After the area is clean, the flap of skin can be placed back onto the wound, in essence becoming a sort of skin graft. In the case of a partial-thickness avulsion, the new skin will grow back from the underside and the old skin (the flap) will likely die and fall off (or can be cut off), similar to a scab. In the case of a full-thickness avulsion, the hope is that the avulsed tissue will graft and new blood vessels will grow into the area, which is why it is critical to remove all debris from the wound.

ABRASIONS

Abrasion removes layers of skin and sometimes other tissue, usually through a grinding force that embeds debris and also creates friction burns (“road rash”). Cleaning abrasions can be very painful, in particular when irrigation isn’t sufficient and debris has to be removed mechanically, such as with tweezers. The upside of an abrasion is that the entire area is usually open to drainage, which helps the body metabolize and/or rid itself of organic, microscopic debris while draining the exudate (pus) from this inflammatory process. An open wound with microscopic foreign matter is less prone to becoming infected than a closed one. The goal after cleaning is to keep the wound clean and focus on speeding healing while minimizing infection. I usually think of an abrasion as a combined laceration, avulsion, and burn. Cleaning, covering, and protecting the wound with sterile gauze (nonstick gauze is useful here) and allowing the area to drain is important. A poultice of honey and herbs can be helpful.

PUNCTURE WOUNDS

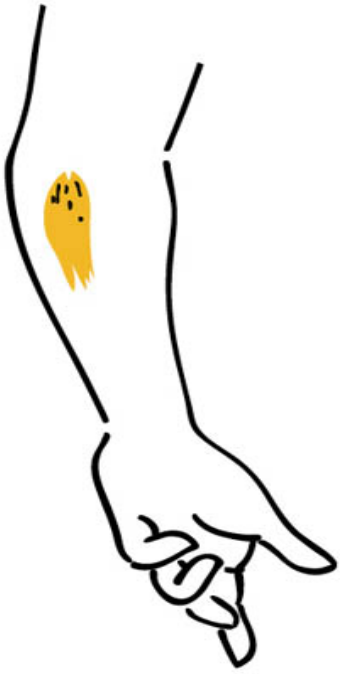
Puncture wounds are caused by a sharp object penetrating the skin and possibly underlying tissue, while usually not leaving an opening that permits cleaning out the wound. This is a recipe for infection, particularly in the field and if the puncturing object is heavily contaminated. Animal bites are often puncture wounds. One of the main concerns with a

puncture wound is the possibility of a tetanus infection, because the wound closes so quickly that it creates an anaerobic environment that can allow bacterial growth.

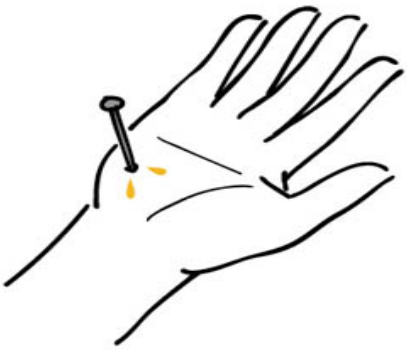
The difficulty in dealing with a puncture wound is accessing the site for cleaning. If possible, aim a small catheter, or some other narrow tube, into the puncture wound to irrigate it thoroughly, especially before the wound has a chance to close in its deepest areas. If the puncture wound was caused by an obviously dirty object (i.e., a rusty nail) and irrigation is not possible, soak the wound in a hot decoction (as hot as the person can stand) of antibacterial herbs. The goal here is to create heat in the tissue around the wound, making it difficult for bacteria to thrive while also increasing circulation and encouraging local drainage of the puncture wound.

TYPES OF WOUNDS

Avulsion



Abrasion



Puncture

Laceration

LACERATIONS

In the field, without access to sutures, there are several different protocols for closing a laceration once it has been cleaned. Where possible (for instance, on extremities), I prefer to apply a poultice and then a compression wrap that holds the poultice in place and is just tight enough to hold the edges of the laceration close together.

On other locations of the body where a light compression bandage is not possible, I turn to wound closure strips. A healing poultice can be taped or otherwise attached on top of the wound closure strips to help prevent infection and speed circulation, inflammation cycles, and healing.

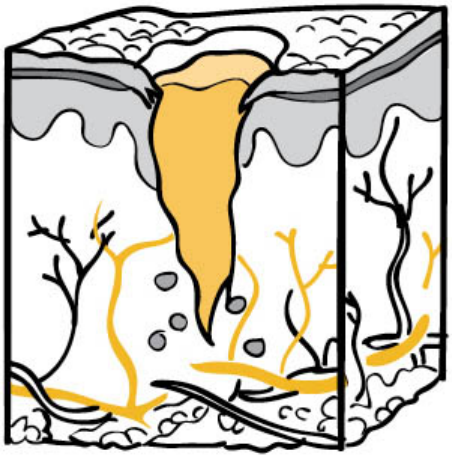
USING HERBS TO HEAL WOUNDS

Herbal medicine can be very effective for healing wounds — so much so, in fact, that it may be your first choice for treating minor wounds. In a worst-case scenario, when you have no recourse to higher care, it may be your only choice.

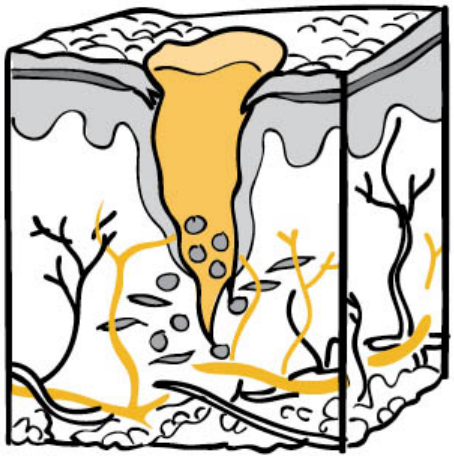
A phenomenal number and variety of plant medicines can be used for helping the body through the various phases of wound healing. I list a number of my own favorites on the following pages, but bear in mind that this is a small fraction of herbs that are useful depending on availability, ecosystem, and other factors.

First, let's look at the pathophysiology of an open wound. How does it heal? You can break down the entire process into four phases.

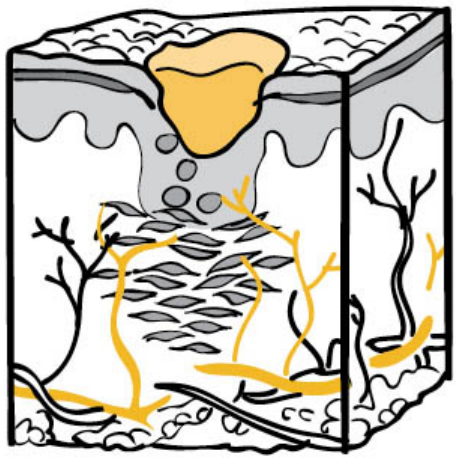
PHASES OF WOUND HEALING



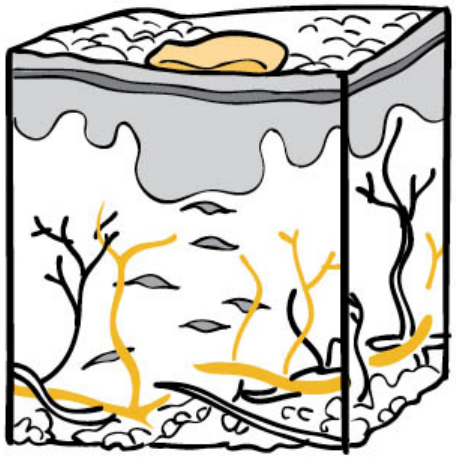
ABOVE: *Hemostatic: the bleeding stops*



ABOVE: *Inflammation: the immune system starts work*



ABOVE: *Proliferation: tissues grow quickly to close the wound*



ABOVE: *Remodeling: the tissue structure reorganizes itself*

HEMOSTATIC PHASE

From the moment the dermis and underlying tissue are compromised, the wound begins to clot. Platelets, clotting factors, and the vasculature itself control the regulation of blood flow into the damaged area, where they create platelet "plugs" and activate a clotting cascade to stabilize the plugs. This phase can last for a few minutes to a few hours depending on the severity of the wound, the health and age of the injured person, and other factors.

The list of herbs you might use during the hemostatic phase is an extremely long one, but basically any astringent herb, applied as a poultice or plaster, will work to stop minor bleeding. Generally, I use herbs to stop bleeding only in the case of minor wounds, and I prefer to use herbs that are also antimicrobial.

In the case of a deeper wound that is bleeding heavily, I prefer to use a pressure dressing for the bleeding itself. I might combine the pressure dressing with a poultice of hemostatic, antimicrobial herbs that will seep an herbal "tea" into and around the wound tissue. It is important to note that I only do this when the wound is clean and fresh (within the first few minutes).

If the wound is obviously dirty or has been uncovered for more than about 60 minutes, don't bother with any herbs. Infection is far more of a concern at this point and adding even antimicrobial herbs into the mix is asking for trouble. In this

case, clean the wound thoroughly, bandage and cover it, and watch it closely. If the wound is healing nicely, leave it alone for a day or two before putting on anti-inflammation, antimicrobial, and tissue-proliferative herbs, such as the following:

- Canadian fleabane
- Chaparral
- Lantana
- Oak
- Shepherd's purse
- Wild geranium root
- Witch hazel
- Yarrow

CLOTTING HERBS

I would not necessarily advise using herbs as a "clotting powder" put directly into the wound, though there may be situations where it is appropriate. In the case of an arterial bleed, for example, if you were converting a tourniquet to a pressure dressing, it is conceivable that packing the wound with a clotting herbal powder would be appropriate. It can be effective but must include herbs that are strongly antimicrobial, like chaparral.

I have packed wounds with herbal powder in the past and it absolutely works. Most of the powder gets pushed out and scabs on the surface of the wound later. However, in the interest of keeping the wound as clean as possible (especially in the field), this is generally not the best choice if pressure bandaging alone will stop the bleeding. To

mitigate any possible infection, it is important to include anti-infective herbs in any powder you are using as a clotting powder inside a wound.

INFLAMMATION PHASE

The inflammation phase follows closely on the heels of the hemostatic phase, usually within minutes or hours. The physiological goal of inflammation around a wound is primarily to neutralize toxins in the area. This permits the tissue to regain a local homeostasis. The underlying mechanisms of inflammation generally relate to the permeability of various tissues, which allows for the migration of immune system cells into the wound area to begin "cleanup."

However, a prolonged state of inflammation in tissue can become counterproductive to tissue healing, promoting an environment that allows rapid infiltration and proliferation by pathogenic bacteria. And it can be difficult to distinguish between a normal, appropriate tissue inflammatory response and one that signals the onset of infection (see here). There is always going to be some minor infection involved in any open wound, but we want to normalize tissue homeostasis and function as quickly as possible in order to restrict the spread or increase of infection.

The goal of the herbalist should be to slowly reduce inflammation while increasing vascularization of the wound area and limiting the possibility of infection, thereby allowing

restoration of normal circulation to the area to clean out the debris and toxins. For this reason, I tend toward anti-inflammatory and/or "drawing" herbs that have vulnerary (healing and supportive) properties while also assisting microcirculation and being antimicrobial. The following herbs can be both taken internally and applied externally to the wound area, except as noted:

- Bilberry leaf
- Black walnut leaf (external use only)
- Gotu kola
- Oak (external use only)
- Plantain (external use only)
- Prickly ash
- Prickly pear pad (external use only)
- Red sage
- Yarrow

PROLIFERATION PHASE

This phase begins within a few days to a few weeks, depending on the severity of the wound, the person's immune health, and other factors. The structures around the wound transition from permeable, inflamed tissue and white blood cells to fibrins and fibrinogens. These protein structures mesh together to close the wound.

The “proliferation” of this phase refers to the fact that now the body is focused on quick recovery rather than perfect organization. Normally, our dermis has a natural growth and structural pattern. During the proliferation phase, however, the injured dermis grows back in whatever pattern allows the quickest molding of the subdermal and dermal layers back together to protect the body from further infection and injury.

The key to this phase is to speed the wound healing while also making sure that infection is not being locked in under the skin. For this reason, I rely on herbs and formulas that are strongly antimicrobial, especially for use in the field. For instance, although comfrey and calendula are excellent as tissue proliferators, I would use them on an open wound only in combination with antibacterial plants. The following herbs are good choices:

- Calendula
- Chaparral
- Comfrey
- Horsetail (especially if there is bone or connective tissue involvement)
- Plantain
- Self-heal

REMODELING PHASE

Once the tissue has regrown and closed the wound site, the phase of remodeling begins. Remodeling can start weeks or

even months after the wound occurred, and last for months to years. In fact, this process is often never really finished completely, which is why we end up with scars. During this phase, the seemingly chaotic latticework of the fibrinogen matrices is slowly replaced by the correct type and structure of tissue to restore full strength and function in the wound area. Scar tissue left behind during the proliferation phase is never ideal.

Scar tissue has little to no vascularization, and the general strength of the tissue itself is considerably less than that of the nonscarred area around it. For this reason, scarred tissue is prone to further injury and infection. As an example, in the many cases of cellulitis I have attended to over the years, more often than not the infection occurred under or near an old scar.

For the herbalist, support for the remodeling process involves breaking up scar tissue with massage and using salves, lotions, and oils to help increase vascularization to the area while supporting the microproliferation of tissue that is broken down during the physical manipulation, thereby changing the scar tissue formations slowly back into healthy tissue. Aloe vera, calendula, comfrey, and gotu kola are all useful, as is vitamin E oil.

DRESSING A WOUND WITH HERBS

Lacerations, avulsions, and abrasions can be dressed with an herbal poultice to facilitate healing. To make the poultice, wrap powdered (or at least finely cut and sifted) herbs in sterile

gauze, wet the gauze and herb thoroughly, and place the gauze on the wound. The herb will drip through the gauze and into the wound.

Another option is to soak sterile gauze in an herbal tincture or glycerite and place it on the wound. Alcohol-based tinctures can also be dripped into or around the area of a wound and then covered with gauze. This stings, and alcohol does some local tissue damage, but in the case of a wound infection, an alcohol tincture poultice is very effective to help reduce infection.

I generally leave a tincture poultice on for an hour or two and then replace it with a water-based poultice. Tinctures and glycerites can also be mixed with honey that is applied as a plaster to an abrasion, laceration, or avulsion.

A honey plaster is especially effective for abrasions and deeper avulsions. Mix ground or powdered herb, tincture, or glycerite into the honey, spread it directly on the wound, and then cover the wound with gauze.

To bandage a poultice or plaster in place on an extremity, gently apply elastic wrap (my preference) or vet wrap around the limb. Take care not to pull the wrap too tight, and always do a CSM check (see here) when you are finished.

DEALING WITH INFECTION

One of the most important aspects of infection management in the field is not only the initial wound hygiene but also the ability to remove pathogenic bacteria once an infection has

started to dominate the wound area. As a general principle, cleaning the wound and restoring vascularization to the area is more effective than simply putting a bunch of antibacterial herbs onto the wound.

Activated charcoal works extremely well for cleaning out a wound. The most effective manner of using charcoal is in a plaster of charcoal powder mixed with clean (preferably distilled) water in a slurry that can be applied directly to the infected tissue area and held in place with a sterile bandage. You should see the signs of infection dissipate within 2 to 12 hours. (For more on using charcoal, see here.)

Several plants are excellent at drawing out infection from a wound; some also increase immune system activity around the wound area. I prefer to use them for toxic infections, such as an ulcerated spider bite, but they will be effective as a poultice for a wound infection, too.

Ideally, you would use a charcoal plaster on the wound first, until the tissue begins to show signs of recovery from the infection, and then you could use these herbs next, as poultices, if you need to continue to draw out infection, poison, pus, toxins, and so forth:

- Echinacea. It's not used so much for drawing out infection, but it can be extremely effective by virtue of its stimulation of immune cells (macrophages and neutrophils), especially with toxic wounds, when applied externally as well as taken internally.
- Plantain. It is helpful for both drawing out infection and healing, and has antibacterial functions (due to baicalin content).

- Prickly pear. The inner part of the pad is an excellent drawing herb; it can even replace charcoal.

As a general rule, hygiene and common sense are more important to wound management than knowing which herbs to use and how to use them. The herbs, however, give us faster healing times, better circulation, anti-infective qualities, and pain management, which are all incredibly useful and important.

First and foremost, we must rely on basic first-aid skills. Keep in mind that wounds will heal on their own, even without any herbs, if simply given a clean environment and protection from bacteria, dirt, and further injury.

Signs of Inflammation versus Infection

Infection can occur during any of the stages of wound healing, but usually it happens during or around the inflammation stage. This can create difficulty in distinguishing infection from normal inflammation. Here are a few ways to tell the difference.

Symptom	Inflammation	Infection

Swelling	Swelling is generally uniform around the wound area.	Swelling is not necessarily uniform around the wound area but may be more pronounced directly around the infected area.
Color	Coloration around the wound can be the normal skin color, pale, or slightly red. Usually it is uniform, and once coloration around the wound has reached a certain size, it does not continue to grow or spread.	Coloration around the wound or in the wound bed is generally red to bright red. Often wounds will have a brighter reddish hue along the edge of the wound in cases of minor infection. In cases of deeper wound infections, the red can have a bright glossy or waxy sheen. A patch of color that grows (regardless of the hue) is also

		generally a sign of infection. Drawing a boundary around the patch of color with a marker is one way to determine whether the color (and swelling) is spreading.

Tenderness	A wound can be tender to the touch, but usually it's more of a general tenderness across the entire wound area.	Specific pain that is sharper and centered directly on and around the infected area, especially when pressed or touched even lightly, can signal infection. In the case of a deeper wound infection that may not be visible on the surface, if the area has been rested and then is moved (such as a leg wound that has been elevated), the pain can be specific, sharp, and severe upon first movement, while lessening after some continued movement.

Heat	General heat around the injury. Usually low grade.	Increasing heat around the wound area. May start out as low grade and then become high grade.
Pus (exudate)	No purulent pus present.	Exudate (white or colored pus) present. The wound will usually begin to drain if it can, and it should be allowed to.
Systemic	No systemic signs.	Fever, chills, nausea, malaise, flulike symptoms. Such signs would generally appear in the later stage of an infection and indicate that the infection is critical.

Streaking (lymphangitis)	No signs of streaking.	Streaks of red traveling toward the heart indicate that the infection is becoming systemic and spreading via venous circulation. This is another specific sign of a late-stage (and dangerous) infection.
Cellulitis	No signs of cellulitis.	Bright red, swollen, hot, painful tissue around the wound. Cellulitis is a sign of a deep infection, usually under the dermis. It must be treated as quickly and well as possible.

A Color Guide to Assessing and Treating Wounds

The color and consistency of a wound can tell you whether it is healing well, whether it is too dry or too wet, when slough (nonviable tissue) needs to be removed, or when infection may be setting in.

Color	Meaning	Treatment
Red	Redness *inside* the wound bed itself (not around the outside of the wound) is a healthy coloration during the proliferation stage. The healthy healing wound bed should look bumpy and red and bleed easily if touched. This stage, called granulation, is when new capillary beds are formed; it is a sign that the wound is healing well.	Keep the wound clean, watch for signs of infection, and continue as you have been.

Pale pink	Pale pink inside the wound bed could indicate poor blood flow to the area.	Consider herbs that will increase vascularization (blood flow) to the area, both taken internally and applied topically (as a poultice). These would include ginger, prickly ash, and red sage.

Purple	Swollen, puffy tissue with purple coloration in and around the wound could possibly indicate trauma to the wound. It could also indicate excessive lymph and other extravascular fluid.	Consider herbs that will increase vascularization, like the ones named directly above, and also lymph movers, like cleavers, echinacea, red clover, and red root. These herbs can be taken internally and/or applied topically. Poke root is another good lymph mover; it can be taken internally but should not be applied topically.

White	White tissue inside the wound bed and directly bordering the wound indicates lack of oxygen to the wound or maceration (too much moisture). In a deep wound, it may also be bone or fascia.	The wound needs to be dried out. Applying dry sterile dressings may be enough. Or you can try one of the many commercial products, such as calcium alginate and sodium chloride dressings, that help pull exudate (drainage) away from the wound while still keeping the environment moist. Dried, powdered prickly pear in a poultice is an alternative.
Yellow	Yellow coloration indicates nonviable tissue or “slough,” a purulent-looking coating that forms on the surface of the wound bed. It	Slough needs to be removed (debrided) because it slows healing, can create scarring, and may promote the development of

	may be yellowish, whitish, or even brown. It may cover the entire wound area or just streaks of it (offset possibly by streaks of the healthy red granulation tissue, for example).	infection. It may be removed with gentle irrigation and/or gentle wiping with sterile gauze. If the slough area is already very wet (easy to wipe away), rinsing it and then applying a charcoal plaster (see here) for 30 to 60 minutes, followed with more rinsing, will help remove the nonviable tissue. If the slough area is drier and doesn't wipe away easily, applying either honey or prickly pear goo to the area and then rinsing it away after a few hours will usually start pulling the slough away. Repeat until

		the area is clean and the underlying (hopefully red, granulated, healthy) tissue is showing.

Green, brown, or black	These colors indicate nonviable tissue; it may be necrotic.	There is little to no healthy vascularization of this area, and the tissue must be debrided from the wound. Depending on the wound, this may need to be done surgically. Try the irrigation and soaking techniques outlined above (to include increasing vascularization to the area). Small patches may debride themselves if there is viable tissue underneath and the area is not infected. Maggot therapy is even a viable option in the right situation and conditions (and using the correct species of maggots).

CHAPTER 9
BURNS

Burn injuries can present a wide range of medical issues, from minor pain to life-threatening damage. Many herbs can help with tissue healing, infection, inflammation, pain, and shock. But in burn management, as with all trauma, it is necessary to have a solid grasp on basic first-aid skills before jumping into herbal medicine protocols.

Let us begin by defining some of the basic pathophysiology of burns. Burns are generally classified in degrees that correspond to the depth of the damage to the tissues. This is usually directly proportional to the temperature of the heat source and the amount of time the body was exposed to that heat source.

FIRST DEGREE: Only the epidermis (outer layer of skin) is affected. The burned skin is red, dry, and painful. The epidermis usually peels after several days. There is no

blistering and only mild to moderate pain. Most sunburns are first-degree burns.

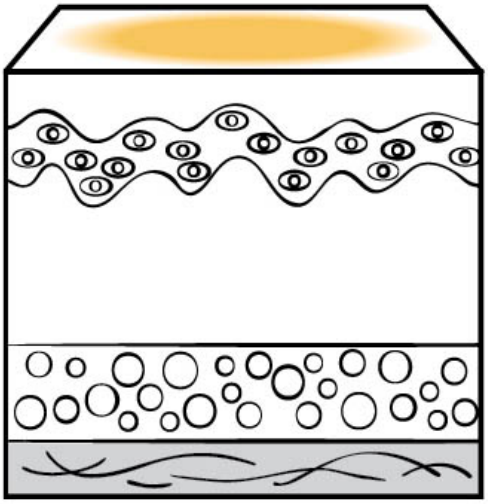
SECOND DEGREE: Epidermis is fully burned and the burn extends into the dermis layer beneath. Blisters are usually present. In general, the faster a blister forms in the case of a second-degree burn, the more heat damage has occurred. The burn is usually pink to red, with fluid present. Pushing on the burn will cause it to blanch (turn white, then back to red again). The pain is moderate to extreme.

Deep second-degree burns, where the damage extends into the deepest part of the dermis, may be drier and may or may not present with blistering. The burn area may be white or yellowish, and the skin may not blanch.

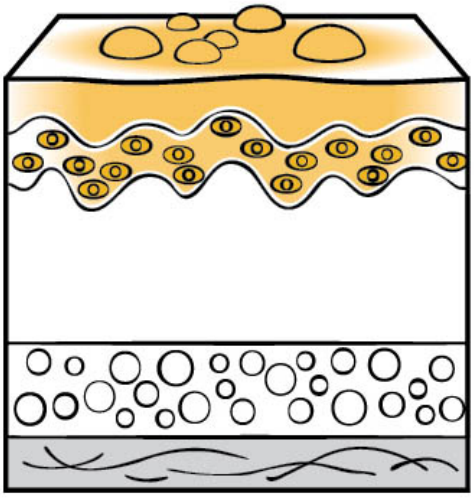
THIRD DEGREE: Also called a "full thickness" burn because the burn extends all the way through the dermis and into subcutaneous tissue. The burn usually appears white and/or leathery and shows no blanching. There is little to no pain at the burn itself (the nerve tissue is destroyed), but the area around the primary burn, where the damage is only a second-degree burn, is very painful.

FOURTH DEGREE: Burn extends into muscle, connective tissue, and bone. The tissue is usually black in appearance. The skin is dry. Eschar (sloughing of dead skin) is present. Fourth-degree burns require amputation or surgical intervention. We won't discuss them here.

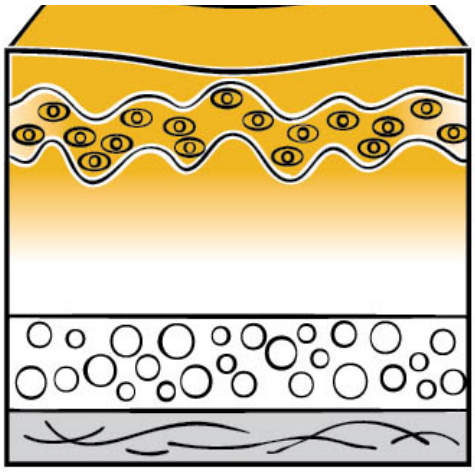
DEGREE OF BURNS



ABOVE: *First degree*



ABOVE: *Second degree*



ABOVE: *Third degree*

While a classification system for burns is useful, allowing us to describe a burn as “first degree” and know that means the burn extends only through the epidermis of the skin, we have to consider at least a couple of other factors. First, a single area of burned skin may range from first degree to third degree and anywhere in between. Also, any particular stage of a burn can be subclassified as either superficial or deep. A superficial second-degree burn can be very different from a deep second-degree burn.

Second, simply classifying a burn by degree does not necessarily describe the full extent of physical damage. Factors such as shock, other injuries, air temperature and humidity, and the age and physical condition of the burn victim play a role in assessing a burn. In other words, it is important not to simply classify a burn as, for example, first degree and assume that is the end of the story.

MECHANISM OF INJURY

Burns can come from a number of sources. Knowing the source of the burn — the mechanism of injury — will help determine the appropriate treatment.

HEAT BURNS

Burns can be caused by thermal sources, such as a fire, a hot pan, scalding liquid or oil, fireworks, and so on. In all cases, removing the heat source from the victim is paramount.

A burn does not instantly stop destroying tissue after the heat source has been removed from contact with the body. It takes some seconds or even minutes for the tissue to cool. In most cases, you can minimize the extent of the burn by speeding that cooling process with cold water or cold aloe vera juice. (Severe third-degree burns over more than 10 percent of body surface are an exception; see here.) I keep at least a quart of aloe juice in the refrigerator for the purpose of dousing or soaking a burn as quickly as possible after it occurs.

In the case of thermal burns involving fire, it is crucial to assess your patient for potential smoke damage or heat injury to the airways. Some of the most common signs are respiratory distress, soot around the airway, coughing (especially if it produces black or sooty sputum), burns around the mouth or nose (or along the mucosa of the upper airways), and changes to the patient's level of consciousness. Airway management will become your top priority if your patient shows any signs of

airway swelling in response to thermal or smoke damage. Bear in mind that this type of swelling may present even hours after exposure to the heat or smoke.

A house or urban fire may release a lot of toxic chemicals that can cause severe damage through chemical toxicity in the body. Altered mental status, depressed respiratory or cardiovascular function, and other central nervous system signs (including altered vital signs such as pulse, respiration, and blood pressure) can present minutes, hours, or even days after exposure to toxic smoke.

CHEMICAL BURNS

Although different from a thermal burn, the tissue destruction caused by a highly caustic chemical on the skin bears similarities in the concerns around healing the tissue. Even more than with a thermal burn, it is critical to get the chemical away from the tissue. Whether the chemical is acid or base (alkaline), run cool water over the burn area for at least 10 to 20 minutes. Some practitioners argue for using a neutralizing solution (e.g., bicarbonate of soda mixed with water for an acid burn, or vinegar for an alkaline one), but most agree that doing so may create an exothermic (heat-releasing) reaction that could cause further damage to the existing burn.

Chemical burns often include ingestion, where the damage occurs to the upper respiratory and digestive tract mucosa. Immediate higher care is required in these cases. Note the specific chemical, if possible, and transport your patient to an emergency room as soon as possible. Drinking small amounts

of water and/or milk can be helpful for the first 30 minutes or so after ingestion, though that does introduce the risk of vomiting and having the caustic substance cause worse damage on its way back up. Ingesting charcoal is of no use in this case; the charcoal will not bond to an acid or base.

What if there is absolutely no higher medical care available for a burn caused by ingestion of an acid or base chemical? I have never had to deal with that situation, but if I did, I would look to gentle dilution through ingestion of water or milk, followed by using mucosal vulnerary herbs (e.g., demulcents), and providing lots of liver and kidney support.

ELECTRICAL BURNS

In any situation where an electrical burn has occurred, scene safety is paramount. Do not touch the victim until you are confident that the source of electricity has been deactivated or removed.

An electrical burn usually results in internal tissue damage. With a high-voltage encounter, you can usually find an entrance and exit wound on the body, but aside from that, there may be very little sign of external damage. However, the cellular damage along the pathway of the voltage through the body can be enormous. One of the big concerns, especially from a high-voltage injury, is muscle tissue necrosis. Another concern is kidney damage as the kidneys try to process large hemoglobin and pigment loads resulting from the tissue damage.

An electrical burn is most likely a case for higher medical care. It helps to know whether the voltage that caused the burn was high or low and how long the victim was exposed to it. A low-voltage encounter can cause muscle spasms; if the person is holding the wire or other source, the hands may lock, leading to considerably more damage than what you'd see with just a second or two of contact with the same voltage.

TREATING FIRST-DEGREE BURNS

With a typical first-degree burn, the epidermis is dry, hot, painful, and damaged. It may slough off, revealing new skin that will be slightly sensitive underneath. What types of herbs and applications work best to help assist our body in healing?

First, consider the mechanism of injury, which will tell you what other damage or symptoms you may need to address. If the burn is a sunburn, then you are dealing with a radiation burn (a type not addressed previously). The symptoms to expect with a burn caused by UV radiation include dehydration, possible heat injuries (heat cramps, exhaustion, or stroke), mild radiation overload or sickness, minor pain, and, of course, the tissue damage itself.

A protocol for a first-degree burn (particularly sunburn), depending on how much of the body is covered, would include making sure the patient is well hydrated and ensuring intake of electrolytes and micronutrients, if appropriate. If the

patient is overheated, peach leaf, rose petal, or cucumber would work well as a cooling lemonade-type drink.

Prickly pear and aloe are excellent topical vulneraries; I feel that the goo from prickly pear pads works better, although aloe is a close second.

Calendula, chamomile, chickweed, comfrey leaf, marshmallow leaf, oats, and plantain all offer soothing pain relief and help heal the skin when applied topically in plaster, compress, or poultice form, or even infused and used in a tepid bath.

Chapparal and goldenrod are not so much for first degree burns as for getting too much sun or even post-radiation therapy. They can be infused and used either in a tepid bath or poured over the head in a cooling shower.

TREATING SECOND-DEGREE BURNS

A protocol for a second-degree burn would include monitoring hydration by tracking the color and volume of urine output, while also ensuring adequate intake of electrolytes and micronutrients, such as vitamins A, C, and E. Depending on the surface area and extent of the burn, the body will need more calories, especially from protein.

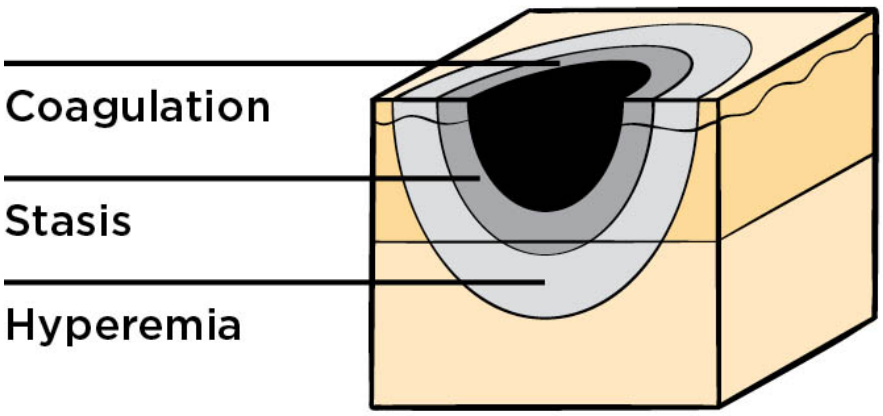
An effective topical treatment is honey mixed with appropriate herbs and spread on the burn. Comfrey root mixed with water produces a protective plaster that dries and covers

small cuts and blisters very well, which can be especially helpful on fingers and feet. For deep second-degree burns that cover larger portions of the body (or anything more than small blisters), consider the plasters discussed for third-degree burn treatment.

All of the herbs listed for first-degree burns are useful for second-degree burns as well. In addition, the following herbs have astringent (drying) and anti-inflammatory properties to accelerate healing for weepy wounds, which are typical of second-degree burns:

- Bilberry leaf
- Lantana
- Oak
- Red root
- Witch hazel
- Yarrow

THIRD-DEGREE BURN ZONES



ESTIMATING THE PERCENT COVERAGE OF A BURN

We sometimes quantify a burn—especially deep second-degree and third-degree burns—based on the percentage of skin that it affects. For burns over a large portion of the body, emergency care providers estimate the coverage based on the “rule of nines,” which assigns the following surface areas (as a percentage of the total body surface) for an adult:

- Front of torso: 18 percent
- Back of torso: 18 percent
- Head: 9 percent
- Arms: 9 percent each
- Front of legs: 9 percent each
- Back of legs: 9 percent each
- Genitals: 1 percent

For smaller burns, the patient’s palm can be estimated to cover roughly 1 percent of their body.

TREATING THIRD-DEGREE BURNS

A third-degree burn can be divided into three zones. The zone of coagulation is the center of burn damage, where tissue is dead and dying. The zone of stasis is the area around the zone of coagulation where blood flow is highly reduced; either it becomes necrotic or it begins to heal if tissue perfusion can take place there. The zone of hyperemia is the area of damage farthest from the zone of coagulation, where blood flow is actually highly increased.

A full-thickness burn is potentially life-threatening and absolutely requires higher care if it is available. In the field, if higher care is not available or you are stabilizing your patient for transport or further assistance, use great caution when working with a full-thickness burn. The biggest danger is, of course, infection, but another major issue is maintaining body temperature. A person with just 9 percent (or even less) coverage by a full-thickness burn can become hypothermic very rapidly.

Running cool water over the burn, while indicated for small burns (especially first- and second-degree ones), can be life-threatening for a large third-degree burn — say, a burn covering an entire leg. The body cools much more rapidly because the damaged tissue is unable to maintain heat. (Commercial burn dressings, like those made by Water-Jel, allow for thermal rather than evaporative cooling around a burn, which avoids the risk of hypothermia.)

With a third-degree burn covering a large area, fluid in the tissues will shift from the normal vascular compartment (blood vessels) into the interstitial space for the first 24 to 72 hours because of the increase in capillary permeability. This causes hemoconcentration — an increase in the concentration of cells and solids in the blood — and the blood "thickens." As a result, the actual pressure inside the blood vessels increases even though the blood has lost plasma and fluid, so blood pressure and "fluid volume" is normal even though the burn victim can show other signs of hypovolemic shock (see here) due to insufficient tissue perfusion.

Other cascading physiological events occur from the loss of proteins in the blood, further increase in capillary permeability, and imbalances in sodium and potassium. These issues journey beyond the scope of this book and underscore the necessity of seeking higher care, if available.

HERBAL PROTOCOL FOR THIRD-DEGREE BURNS

In the case of a small full-thickness burn that does not present the cascade of systemic issues described above, herbal care can be successful. I have had occasion to care for two full-thickness burns using only herbal medicine. Both were around 1 percent of the skin surface area, so relatively small, yet still very severe.

Plant medicine has potent abilities to provide nutrients to the skin around the burn, encourage tissue proliferation,

prevent infection, deal with free radical toxicity, and reduce pain and inflammation.

On the burn itself, an effective plaster is a 1:1 mixture of raw honey with wheat germ oil or any other source of vitamin E oil. (Note: Someone who is highly allergic to gluten may not be able to tolerate wheat germ oil.)

To this mixture, add at least one or more (preferably all) of the following herbs, in equal parts, in powder form:

- Burdock leaf
- Comfrey leaf
- Lobelia leaf
- Marshmallow
- Plantain
- Self-heal
- Uva ursi
- Yarrow
- Yerba mansa

Combine the herbs with the honey/vitamin E-containing oil, adding as much of the herb powder as you can while keeping the mixture sticky. If it does not stick to your finger when you touch it, it is too dry.

Clean the burn thoroughly, removing as much dead tissue as possible. Apply the honey/oil/herb mixture liberally to the burn area and cover with sterile nonstick gauze. If you don't have nonstick gauze, use normal sterile gauze moistened with saline solution (preferably; see here) or purified water.

Cover the wound well to protect it from contaminants, but don't seal it airtight. Although the oxygenation of the tissue comes from the blood circulation to the area, I find that both burns and other tissue wounds benefit when they can

“breathe” a little bit and aren’t covered with an occlusive dressing.

AS HEALING PROGRESSES

The burn tissue will absorb the phytonutrients it needs from the herbal plaster, while the plaster will help maintain a moist environment to encourage tissue to perfuse, regrow vascularity, and limit the amount of eschar (dead skin and scab around burn area).

Replace the plaster and bandaging anywhere from every 12 hours (preferred for the first several days to monitor progress and possible infection) to a maximum of every 24 hours, depending on severity of the burn and the need to check for infection. It may be necessary to dampen all bandages with sterile saline solution to unstick them from the wound edges and ease the removal.

Observe the area and note any increase or decrease in tissue perfusion, the tissue state in all areas of the burn, the formation of eschar, tissue contracture (tightening and loss of elasticity), and any signs of infection. The scab that forms around the edge of the burn area will consist of dead tissue and some of the powdered herb that was not metabolized in the burn tissue.

The key to preventing scar tissue formation holistically is to keep the tissue moist (not wet), supple, and warm (remember, burned tissue is unable to maintain body heat), while using herbal remedies that improve perfusion, limit inflammation, and assist with recovery from oxidation damage.

Positioning the burned area so that the skin is gently stretched while at rest, along with additional light stretching of the area also helps prevent the skin contracture that can lead to scars.

Pain management herbs can include the lobelia in the plaster. Some of my favorite nervines to help a patient cope with pain are:

- Corydalis
- Feverfew
- Jamaican dogwood
- Meadowsweet
- Mimosa
- Prickly poppy
- Saint John's wort

All of these herbs should be taken internally. See more on using herbs for pain.

Other internal herbal support should include lymph movement and immune support (including anti-infection support if you have reason to suspect infection), along with nutritive, liver, and especially kidney support.

Herbs that I like to use to help support these functions include:

- Burdock root and seed
- Cleavers
- Cordyceps
- Corn silk
- Echinacea
- Goldenrod
- Horsetail
- Milk thistle
- Nettle leaf, root, and seed
- Parsley
- Poke root
- Red clover
- Red root

For more on herbs that support specific body systems, see Chapter 4.

CHAPTER 10
FRACTURES

A broken bone, regardless of the type or location of the break, is a serious injury. Some fractures are more traumatic than others, but any type of fracture brings with it a great amount of pain, inflammation, and major reduction in range of motion and strength.

The protocols given in this chapter assume that a fracture has been diagnosed by a doctor or other orthodox health care provider, and the bone has been set into place, if necessary. Treating a broken bone in the field involves a set of skills and knowledge that are beyond the scope of this book. Here, the primary concern is the healing process for the broken bone after that initial treatment.

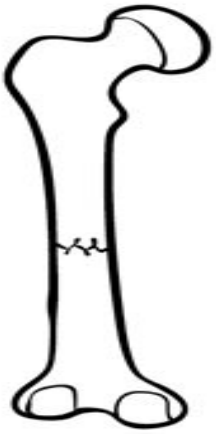
Though usually less serious than a fracture, dislocated joints fall into this chapter as well.

TYPES OF FRACTURES

Even within the limitations of the post-diagnosis situations we are working with in this chapter, it helps to know the different types of fracture in order to understand the location and the extent of bone and soft tissue injury. The more common types of fractures include the following:

- **Closed.** The skin remains intact around the break.
- **Open or compound.** The bone has penetrated through the skin or is exposed to the outside through a laceration.
- **Comminuted.** The bone is broken in several pieces, typically requiring surgical repair; there is probably a lot of soft tissue damage.
- **Rotational or oblique.** The bone is broken diagonally and may itself have suffered very serious trauma.
- **Avulsion.** A piece of bone is pulled away by connective tissue, which usually causes severe soft tissue (sprain/strain) injury in addition to the fracture.

Awareness of the likely damage caused by a fracture can help guide our treatment protocol, but the primary concern with any fracture is to prevent further injury by immobilizing, padding, and stabilizing the injured area.

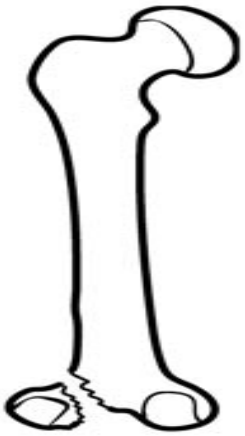


Closed

Open or
compound

Comminuted

Rotational
or oblique



Avulsion

STAGES OF HEALING

Bone is living, breathing tissue. It has an intraosseous vascular system, a membrane (periosteum) of vascular tissue, and various densities and compartments that communicate with and through the fluids that move in and around the bone tissue. A broken bone is a huge event not only to the physiology and homeostasis of the area immediately surrounding tissue, but to the entire body. So, as medics, of course we are concerned with healing the bone, but we must also focus on supporting circulation and detoxification in the surrounding soft tissue and the entire body. Using proper nutrition and herbs, we can greatly enhance the body's own ability to heal.

To help the body heal a fracture, we focus on three of the classic stages of tissue healing: inflammation, proliferation, and remodeling.

INFLAMMATION

During the inflammation stage, a series of events increases permeability to the region to facilitate cleanup and the initial stages of repair. Inflammation is a double-edged sword, however. The cytokine cascades, macrophage activities, osteoblasts, and chondroblasts that are the precursors to new bone and soft tissue development are all vitally important to

healing. However, inflammation causes the conditions that we perceive as pain, and excessive inflammation or inflammation at the wrong stage of healing can prevent proper microcirculation, which is vital to rapid repair.

An excess of debris at this stage can prolong inflammation, which prolongs healing. For instance, large blood clots occupy (and increase) the space that granulation must fill during the proliferative phase and end up as mechanical barriers for the oxygen perfusion that is vital to healing. Additionally, the accumulated wastes, like blood clots, can become an excellent medium for the proliferation of bacteria and infection. Indeed, the inflammation stage is when we have to be most alert for signs of infection. Any fracture that involves exposure to the outside has a far greater risk of infection than a closed break.

PROLIFERATION

During the proliferative stage of bone repair, a soft callus is formed by proteins that were produced by the aforementioned osteoblasts and chondroblasts. This callus then hardens over the following few months, depending on the severity of the injury. During this proliferative phase, the soft tissue also repairs itself. This phase necessitates hypercirculation to the area in order to speed the healing time. It also necessitates an increase in nutrients.

REMODELING

The remodeling stage of bone healing, like its analog in soft tissue healing, can take months to years. This is the stage where the callus remodels and reweaves itself into stronger bone tissue through new cell growth and old cell resorption.

NUTRITION TO ASSIST BONE HEALING

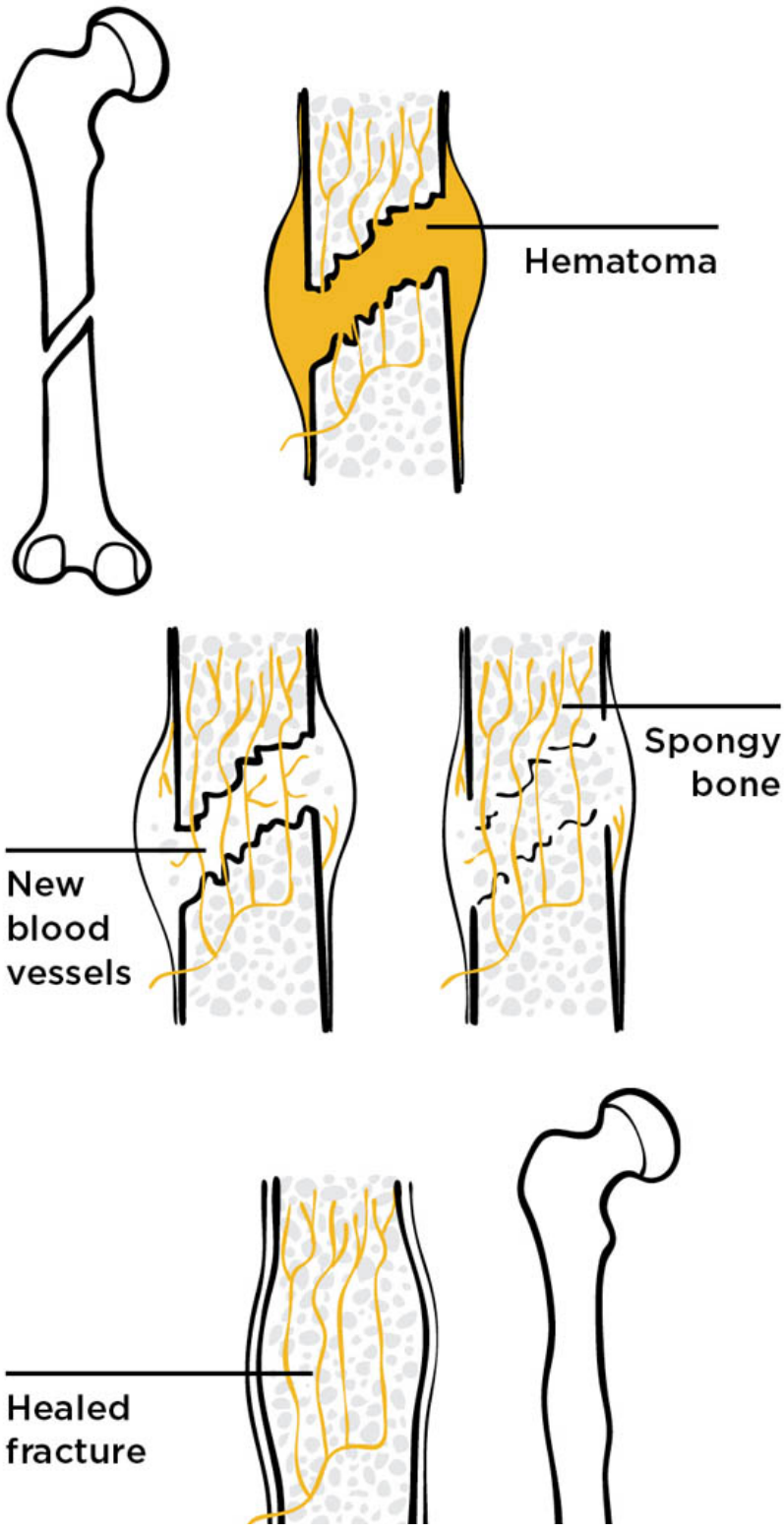
From the initial injury through most of the proliferative phase, the body needs more nutrients and calories. Depending on the extent of the break, the patient should double or even triple their daily caloric intake to help the healing. A lot of those extra calories should come from protein; the construction of new bone tissue requires the amino acids that come from dietary protein.

The most crucial amino acids are arginine, lysine, glycine, proline, glutamine, and cystine. Depending on the patient's size and the severity/size of the break, they made need from 15 grams to as much as 50 grams of additional protein per day, which can be provided through supplements.

Of course, proper healing of a broken bone requires a number of micronutrients and vitamins as well. It's a good idea to get these vitamins and micronutrients not only from good food, but also from decent-quality supplements that include bioflavonoids and other methods of increasing the bioavailability of nutrients.

First and foremost, vitamin C is crucial in rebuilding both connective tissue and bone. Vitamin D and lysine enhance the absorption of calcium, which is one of the critical micronutrients for healing bone and connective tissue. Increasing the zinc, copper, bioactive silicon (silica), magnesium, and phosphorus is critical as well. Vitamin K and the B complex (especially B_6) vitamins are especially essential during the inflammation and proliferative stages of bone healing. A fracture and the resulting inflammation initiate a tremendous amount of free radical activity, and antioxidants such as vitamin C, vitamin E, and lycopene are indicated for this reason.

STAGES OF BONE HEALING



HERBS TO ASSIST BONE HEALING

Herbs can assist with mitigating inflammation, improving microcirculation, delivering nutrients, and other aspects of healing a fracture and concomitant soft tissue injury. In the preface I tell the story of my own broken thumb and the two herbs I used to help it mend without any pins, surgery, or manipulation.

Those herbs are comfrey and horsetail, both of which have high levels of several micronutrients, most notably the silica in horsetail, which plays an important role in collagen and bone formation. Silica is not soluble in water or alcohol, and it has the greatest bioavailability in the body when it is ingested in dried form. Powdered horsetail is almost tasteless and can be added to smoothies or mixed with a beverage of choice and ingested. Follow the dosages listed in the materia medica. Horsetail can also be applied directly onto the injury site in poultice or plaster form.

The internal use of comfrey is controversial because of the plant's pyrrolizidine alkaloids (see sidebar below). For soft

tissue and bone trauma, I generally use comfrey topically. It is very effective when applied in a poultice or plaster.

PYRROLIZIDINE ALKALOIDS

Pyrrolizidine alkaloids (PAs) are substances produced by plants, often to ward off insects or herbivores. There are many types of PAs, ranging from almost zero toxicity to highly toxic, and there are low-PA hybrids and plant extracts available. PAs can build up toxicity and cause liver damage in humans if used consistently over time. Of particular concern is veno-occlusive disease (VOD), a blockage of some of the small veins in the liver, that may not be detectable while it is developing.

In situations where an herb containing PAs is highly indicated for internal use or there is no alternative, I combine it with milk thistle and licorice to help mitigate damage. I only give it in short-term dosage (2 weeks max) and during intake I highly recommend increasing intake of the following supplements: N-acetyl-cysteine, vitamin C, and sublingual or liposomal-form glutathione. Herbs referenced in this book that may contain toxic PAs include butterbur, comfrey, boneset, and gravel root. Some research indicates that licorice may help protect the liver from PA damage.

INCREASING MICROCIRCULATION

Boosting microcirculation to the area of trauma allows for the removal of waste products and increased oxygen in the area. This assists in moving the tissues through the inflammation stage into the formation of new blood vessels in the region (angiogenesis). The herbs listed below can be used to enhance microcirculation through topical application (preferred) and internal use, except as noted:

- Arnica (external use only)
- Cayenne (external use preferred)
- Gotu kola
- Juniper (external use preferred)
- Prickly ash
- Red sage
- Yarrow

MANAGING INFLAMMATION

Inflammation is vital to the wound healing process. Pharmaceuticals, including nonsteroidal anti-inflammatory drugs such as aspirin and ibuprofen, will actually delay healing and should be avoided if used only for the purpose of limiting the normal inflammation process of wound healing. This is true whether the injury is a broken bone, with accompanying soft tissue injury, or a sprain or strain.

With inflammation, local immune-cell activity is essential, as is the removal of waste products from the region via the lymph system and the blood circulation. However, if these processes of immune activation and toxin cleanup run awry, then inflammation can actually hinder healing.

For that reason, I like to use herbs that help support the inflammation process rather than try to shut it down. Most of the herbs in the microcirculation list at left will do this, in particular, gotu kola. There a few other herbs in addition to those listed that I have come to appreciate for their wide range of abilities in reducing inflammation without inhibiting the aspects of the inflammatory process that promote healing. Three herbs that fulfill this goal are devil's claw, ox knee, and self-heal. All three can be used internally but external use is preferable.

TREATING SOFT TISSUE INJURIES

Over the decades I have experimented with hundreds of different herbs and dozens of different combinations for soft tissue injuries. This list includes my favorites. It's a long list and you do not have to include all of them, but the more you use in a formula, the better you will like it. My must-have herbs, however, are arnica, cayenne, elder leaf and/or bark, juniper, red sage, and yarrow. Most of these are best used topically, in a salve or liniment.

I prefer to percolate an isopropyl alcohol tincture for my liniments, preparing each herb separately with a 50 to 70 percent alcohol, then mixing them all except cayenne in equal amounts. I add somewhere in the neighborhood of 3 to 7 percent cayenne by volume to the mixture, depending on the strength of the cayenne tincture and how hot I want the liniment to be.

Note: You can add 99.9% pure DMSO (dimethyl sulfoxide), up to 20 percent by volume, to your liniment to help move the liniment into the tissue, but use it very carefully and hygienically as DMSO can also carry microscopic dirt and microbe particles transdermally. DMSO plus a heating herb like cayenne can make the liniment way too hot, so test it carefully before using.

When making an infused oil or salve (safflower oil is particularly well suited for this purpose), I usually use about ¼ to ½ part cayenne relative to the other herbs. Once the oil is infused and strained, and before you make a salve from it, if that's what you're doing, I recommend adding one or more "hot" essential oils, such as camphor, cinnamon, clove, or juniper, as a carrying oil to help penetrate the skin. I add somewhere between 2 and 5 percent by volume of essential oils to the infused oil (that's 6 to 12 ml of essential oil per cup of infused oil).

Here are some of the herbs I like to use for treating soft tissue injuries. Some are for external use only, as noted. You can learn more about most of these herbs in the materia medica.

- Arnica. Boosts microcirculation and lymph flow around damaged tissue. External use only.
- Black cohosh. Skeletal muscle relaxant and pain reliever.
- Camphorweed. Boosts microcirculation and lymph flow around damaged tissue. External use only.
- Cayenne. Boosts microcirculation around damaged tissue.
- Comfrey. Increases soft tissue healing. Preferably external use only. See cautions with internal use.
- Devil's claw. Supports the inflammation process, relieves inflammation and pain.
- Elder leaf and/or bark. Increases soft-tissue healing.
- Goldenrod. Supports and promotes inflammation process.
- Gotu kola. Boosts microcirculation, supports the inflammation process.
- Horsetail. Increases soft tissue and bone healing.
- Juniper. Boosts microcirculation around damaged tissue.
- Ox knee. Supports the inflammation process, relieves inflammation and pain.
- Prickly ash. Boosts microcirculation around damaged tissue.
- Red sage. Boosts microcirculation, helps create new capillary growth and endothelial repair.
- Self-heal. Supports the inflammation process and repair of damaged endothelium.
- Yarrow. Boosts microcirculation, speeds cleanup of waste products around damaged tissue.

DISLOCATIONS AND SUBLUXATIONS

A bone pulled out of place from a joint is called a dislocation or subluxation (depending on the severity). Many dislocations or subluxations can be "reduced" (pulled back into place) by applying traction in the right direction. These types of injuries can affect any joint in the body, from the shoulder to the hip, knee (patella), elbow, wrist, toe, and finger. An anterior shoulder dislocation—in which the joint is forced forward—is most common and, fortunately, relatively easy to reduce, so let's discuss this one type of dislocation, knowing that similar principles apply to any joint that is dislocated.

As with a wound or broken bone, our first task is to prevent further injury to the area and to stabilize it enough to be able to move the patient to higher care (or wherever the next location is going to be). Patient comfort plays a huge role in our decision making. If the patient is comfortable with reducing a dislocated joint (maybe it is not the first time they have dislocated this joint, for instance), then choosing to help is not difficult. In fact, the patient may already know exactly what needs to be done.

I dislocated my shoulder during a backcountry skiing accident when I was in my early twenties. It was before I had any medical knowledge or training, but I just knew what had happened. I asked one of the folks in the group to hold my wrist while I pulled my shoulder back into alignment because I could tell that was what needed to happen. My point is that it is

important to trust the injured person's judgment, in particular if they are alert and oriented and have a good sense (arising from previous experience) of what they need to do.

Nevertheless, if you suspect that the injury is anything other than a shoulder dislocation, then the treatment of choice is to put the arm in a sling (if you suspect a fracture, splint it first) and get the patient to higher care. Two other injuries in the shoulder area that can, to an inexperienced eye, appear similar to a dislocated shoulder are an acromioclavicular joint (AC) separation and a fracture of the collarbone.

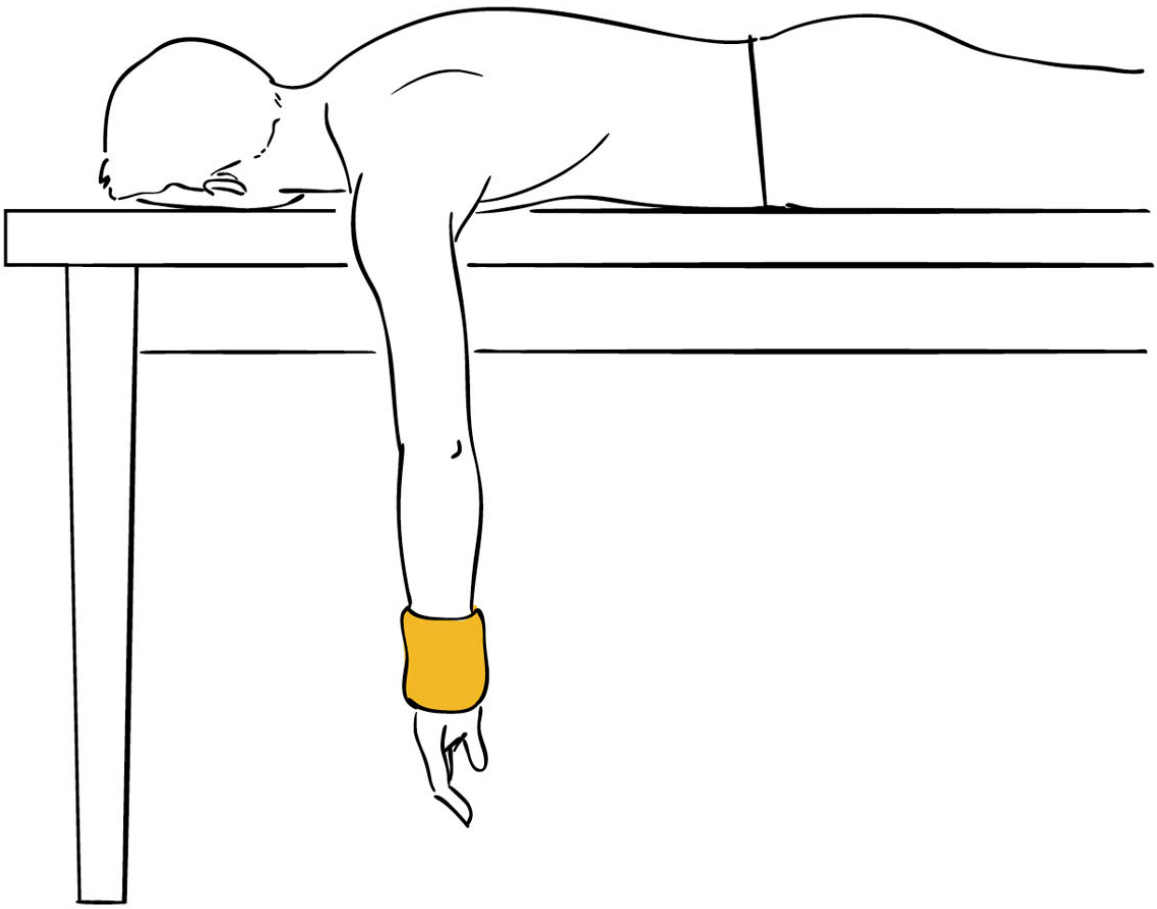
However, if you and your patient feel sure that this is a shoulder dislocation and they are willing to attempt a reduction, the easiest method—in particular for an anterior shoulder dislocation, which comprises the vast majority of shoulder dislocations—is to pull the arm toward the front while the injured person tries to relax their shoulder and arm muscles.

First, do a CSM check on the hand and forearm of the injured side, to establish a baseline to compare to when you do the CSM check after your reduction.

Have the person lie comfortably on their stomach on a padded table or any surface about 3 feet above the ground, with their injured arm hanging straight down toward the ground. Ask them to relax their arm and shoulder. Put one hand on the front of their shoulder to support it and grasp their wrist with your other hand. Carefully pull the wrist toward the ground to apply gentle traction, and the arm should slide back into place in the shoulder joint. This method is called the Stimson technique.

If it is not successful immediately, you can attach 5- to 10-pound weight (for an adult) to the wrist while the patient is lying in the position described. Allow the weight to gradually fatigue the shoulder muscles to the point they relax and let the shoulder pop back into place. If you are using weight, you can let the arm hang for 5 to 30 minutes as long as the patient is comfortable.

A dislocation is painful, and the reduction will cause a sharp increase in pain for a few seconds as the proximal end of the humerus slides back into the socket. Once the joint is back in place, pain should be significantly reduced. Do another CSM check, then put the arm in a sling with a swath on the injured side to protect it (see here). Topical and internal application of the herbs discussed here for inflammation, proliferation, pain relief, and healing for fractures can be used with any soft tissue injury such as a dislocation.



ABOVE: *If manually manipulating the shoulder isn't successful, have the patient lie face down with a weight attached to the wrist.*

CHAPTER 11

ENVIRONMENTAL INJURIES

One of the critical functions that our bodies perform is the maintenance of body heat within the narrow range of temperatures in which we can survive. As medics, we need to recognize the symptoms of systemic overheating (hyperthermia) or cooling (hypothermia) and know how to respond appropriately to restore and maintain proper body temperature. Another common ailment that occurs as a direct result of environmental exposure is altitude sickness, which can range in seriousness from mild to fatal.

HYPERTHERMIA AND HEAT INJURIES

Heat injuries can be categorized into three different types: heat cramps, heat exhaustion, and heat stroke.

Heat cramps are painful spasms that usually occur in the large muscles, such as quadriceps, hamstrings, and abdominals, in response to overexertion in hot conditions. They are often related to dehydration and lack of electrolytes. These cramps can present like normal muscle cramps but may not subside in the same way that a typical leg cramp would once you stand and put weight on it.

Treatment of heat cramps should include cooling and rehydrating the body, as described below for heat exhaustion, as well as gentle massage of the cramping muscles.

Heat exhaustion can present with signs and symptoms such as mental disorientation or confusion, nausea, vomiting, diarrhea, visual disturbances, headache, fainting, profuse sweating, tachycardia, and dark-colored urine. The very young, the elderly, and people with medical conditions may be more prone to this condition.

The focus in treatment of heat exhaustion should center on cooling and rehydration. If the patient is not cooled fairly quickly, the condition may progress to heat stroke, which is far more serious.

Cooling an overheated person involves:

- Loosening or removing clothing
- Spraying or sponging water onto the skin
- Fanning to create air movement across the body
- Having them drink water slowly but consistently
- Administering electrolytes

Heat stroke is a life-threatening condition that requires immediate higher medical care. If the core temperature of the body starts to exceed 104°F/40°C, permanent injury or death may ensue. The signs and symptoms are similar to those of heat exhaustion, but more severe. The patient may be unresponsive or severely disoriented and/or seizing; the skin will be hot but may be dry rather than sweaty.

The key to treating heat stroke is quickly lowering the core body temperature. Immersion in cold water works well. If that's not possible, apply cold packs to the armpit, groin, and back of the neck, while constantly monitoring the patient's vital signs and taking care not to damage the skin from too much cold. Moving the temperature too far in the other direction is also a danger; you don't want to induce hypothermia.

If you have one, a rectal thermometer is the most reliable method for monitoring body temperature; oral temperature will be affected if the patient is sipping on fluids.

If you have no way to monitor core temperature, then you must be that much more aware of clinical signs and symptoms of hyper- and hypothermia. Vital signs and level of consciousness are crucial here. If you have cooled the patient and they are responsive, sitting up, and sipping on fluids, you must monitor and possibly slow the cooling process to make sure they don't start shivering and going into mild hypothermia. The goal is to get their body temperature down into the normal range and keep it there.

If the patient is unresponsive, an IV is the best way to administer fluids, if you have the equipment and experience.

Rectal administration of fluids and electrolytes by enema can also be effective. Never administer oral fluids to a person who is unresponsive.

As an unresponsive heat stroke patient becomes responsive, be prepared for vomiting. If that happens, turn them on their side or to a position that is safe for their airway.

ELECTROLYTE IMBALANCE

Electrolytes are essential to a number of bodily functions, including nerve and muscle function, maintaining blood pH and pressure, and helping rebuild damaged tissue. We normally nourish our body with electrolytes through our diet. We can also use electrolyte drinks as supplements. Extreme exertion over time without replacement of electrolytes can result in a fluid-electrolyte imbalance in the body characterized by low levels of sodium, potassium, and even calcium.

The symptoms and signs of an electrolyte imbalance can mimic those of a heat injury. The patient may present with severe mental disorientation, seizures, muscle cramps, nausea and vomiting, and severe headache. How do we tell the difference? Key indicators can be found in the patient history: Has the patient been drinking water? Exerting themself? How is the patient's urinary output? Core and skin temperature? Also, a person suffering from electrolyte imbalance will present with perspiration, which is possibly absent in the case of heat stroke.

This is another situation that absolutely requires higher care as quickly as possible. In the meantime, you can administer saline via IV fluids. If that's not possible, oral intake of electrolytes through food and/or high-electrolyte concentrated fluid (see Nourishing Herbs below) may be the best immediate field treatment available.

HERBS FOR HEAT-RELATED EMERGENCIES

As with every emergency in a remote or post-disaster environment, an ounce of prevention is worth a pound of cure. In this respect, herbs are generally far more effective at helping keep a person cool, nourished, and less likely to suffer a heat injury than they are at "curing" the heat injury.

COOLING HERBS. A great way to keep people cool and hydrated is by using cooling herbs, such as hibiscus, lavender, lemon balm, peach leaf, and rose hip. Cucumber, lemon, and honey are also cooling and refreshing, and add nice flavor as well. A cold tea can be made with any or all of these, or alternatively, some sprigs and/or leaves of any of these can be added to water as flavoring. My favorite combination is several slices of cucumber and squeezed lemon along with a few peach leaves and hibiscus flowers in a quart or so of ice water.

NOURISHING HERBS. Many herbs have high levels of micronutrients that our body uses in rebuilding from cellular damage, and others can help replace electrolytes. On the micronutrient side, some of my favorites are bilberry,

bladderwrack, moringa leaf, nettle leaf, parsley root, and rose hip.

Many of these herbs are overplayed in the world of nutraceutical buzzword marketing, but each is useful medicinally while also being a dense source of micronutrients. When preparing any of these herbs for the purpose of their nutritive content, I make a multifractional extract: I start by soaking them for 12 to 24 hours in just enough apple cider vinegar (ACV) to cover them. Then I strain that mixture and continue to extract from the marc through a decoction that includes glycerin and finally an alcohol rinse. (See more details on making multifractional extracts.)

One of many interesting herbs that has a high electrolyte content — in particular salt — is the tamarisk tree (*Tamarix* spp.), often called salt cedar. Though considered an invasive species throughout parts of the southwestern United States, it's highly useful and much prized by outdoors and primitive skills enthusiasts for its straight, long branches, which have a number of utilitarian purposes. Depending on the type of soil that it grows in, the tamarisk may excrete salts from the soil through glands in the leaves. For an electrolyte replacement, you can prepare the leaves as an infusion or place a small cluster directly in your mouth and suck off the salt.

HERBS FOR HEAT CRAMPS. The following herbs are helpful for relieving muscle cramping and pain: black cohosh, black haw, cramp bark, lobelia, passionflower, and wild lettuce.

Tinctures are the best way to administer these herbs. Alternatively, offer them as a cooled infusion or even sun tea (an infusion steeped in sunlight rather than on a stove top).

HYPOTHERMIA AND COLD INJURIES

Hypothermia is often divided into three stages: mild, moderate, and severe. Standard thermometers usually don't indicate the temperatures at which hypothermia begins, so it's more useful to be able to recognize signs and symptoms.

Mild hypothermia can manifest as shivering (usually controllable), mild disorientation, and lack of coordination. Respirations and pulse may increase slightly.

Moderate hypothermia begins when the shivering becomes uncontrollable and mental orientation, physical reflexes, and coordination all worsen. Respiration and pulse may start to slow.

Anything you have ever learned about warming a person up (or just using common sense) will work for mild and even moderate hypothermia, from getting them into dry, warm clothing and wrapping them in blankets to giving them warm drinks (hot chocolate, hot gelatin, or hot sugar water would be a good choice) and providing an external heat source.

Monitor their mental state and vital signs as they recover. Food and hydration are both important; start with warm fluids, then add carbohydrates, proteins, and finally fats.

Severe hypothermia may involve hallucinations, fixed and dilated pupils, paradoxical undressing, and loss of consciousness. This is an extreme medical emergency and the

patient must be handled with great care. The added physical stress to the heart increases the danger of cardiac arrest, and any kind of rough handling while moving the patient could trigger a heart attack. Aside from care in handling, the same process of warming applies in the field for severe hypothermia as it does for moderate and mild cases, while en route to higher medical care.

WARMING HERBS increase blood flow throughout the body. They may induce more distal circulation and even sweating as the body responds. If a person is dry and wrapped in blankets, this is a good thing, but excessive sweating can lead to cooling if bare skin is exposed. Keep the patient wrapped up, warm, and drinking warming herbs along with good nutrition and lots of hydration.

One of the best warming herbs is prickly ash (*Zanthoxylum* spp.). Because it is both warming and immune supportive (stimulating immune function and lymph movement), it is particularly effective in cases where a person, perhaps a camper or backpacker out in a remote area, is already shivering from illness and hence more susceptible to colder temperatures.

Ginger (*Zingiber officinale*) is another good heating herb. Both cayenne (*Capsicum annuum*) and black pepper (*Piper nigrum*) are also helpful, albeit very, very heating, so they should be used only in small amounts or as a small part of an overall heating formula. Yarrow (*Achillea millefolium*) and elder (*Sambucus* spp.) flower are also excellent herbs to put into a heating formula, even though they are not generally

thought of as “spicy” and not as strong as diaphoretics (herbs that initiate sweating).

COLD DIURESIS

Hypothermia can cause “cold diuresis” — an increase in urine as a result of exposure to the cold. As the body cools, the body moves blood away from the extremities toward the interior to help keep the core warm. More blood now flows through the kidneys, which leads to higher urinary output. This is one more reason to practice good hydration when working in cold environments and dealing with cold injuries.

ALTITUDE ILLNESS AND INJURIES

High altitude can cause a number of different physiological responses in the body, from mild to life-threatening. The most common of these, acute mountain sickness (AMS), can occur at altitudes as low as 6,500 feet (and growing up in Colorado, I knew people who were affected at even lower altitudes). However, people more commonly start to feel symptoms at around 9,000 to 10,000 feet. Anyone can get AMS, whether

they have had it before or not, regardless of their age or physical condition.

The symptoms of AMS can include headache, fatigue, nausea, shortness of breath, muscle aches, dizziness, and loss of appetite. It may interfere with the ability to sleep at night. Most people recover within 2 to 3 days while staying at higher altitudes. However, if severe symptoms persist for more than a few days, the individual should be taken to a lower altitude to facilitate recovery.

One key factor to bear in mind is that dehydration both results from and exacerbates AMS. Because there is less oxygen at higher altitudes, the body needs to produce more red blood cells. As part of the process of trying to increase the oxygen-carrying capability of the body, our kidneys excrete more water, creating a high-altitude diuresis effect. Additionally, we may lose more water through rapid evaporation of our sweat without realizing it. Therefore, drinking more water is essential.

Many herbs can help the symptoms and even some of the causes of AMS. Primarily we want to nourish the body, build the oxygen-carrying capacity of the blood, increase oxygenation to the tissues of the body (including the brain), and relieve the discomfort and other symptoms.

If possible, start taking herbs a day or two before traveling to higher altitudes. I recommend ashwaganda root, chlorophyll, cordyceps, and rhodiola. They can be taken while you are at high altitude as well, of course, but they are of best use when taken ahead of time to help prepare the body.

Be aware that some of the herbs recommended below — namely, cordyceps, eleuthero, rhodiola, and sometimes

Chinese black cardamom — can have a very energizing effect, making it difficult to get to sleep if you take them within about 6 hours of going to bed.

High-Altitude Formula

Once at higher altitude, my favorite formula for AMS symptoms consists of the following herbs, used in roughly equal proportions. (Not all of these herbs need to be in the formula, but I normally use most or all of them.) Prepare the formula as a tincture (see here). For an adult dosage, I suggest ½ to 1 teaspoon, taken one to five times per day.

Herb	Purpose in the Formula
Algerita leaf (not root) If it's not available, my first choice is Chinese black cardamom, then ginger and/or wormwood.	To combat nausea
Ashwagandha	To increase red blood cell production and support mitochondrial function
Bacopa	To increase cerebral and tissue perfusion

Cordyceps	To increase red blood cell production and cardiovascular performance
Eleuthero	To increase circulation and relieve fatigue
Gotu kola	To increase cerebral and systemic perfusion
Prickly ash	To increase circulation throughout the body
Red sage	To increase circulation and cardiovascular performance

HIGH-ALTITUDE INJURIES

High-altitude pulmonary edema (HAPE) is a far more serious condition than AMS and can occur at altitudes as low as 8,000 feet. The symptoms include fatigue, shortness of breath and difficulty breathing, and coughing that usually starts as a dry cough and may become more productive over the course of a few days and start to include bloody (pink) sputum. The biggest danger here might be in mistaking HAPE for a respiratory infection and not descending. If someone develops these symptoms, it is crucial that they descend and get to higher medical care as quickly as possible.

High-altitude cerebral edema (HACE), which can resemble other types of cerebral edema, is life-threatening. Symptoms of HACE include disorientation, nausea and vomiting, lethargy, headache and vertigo, difficulty walking or speaking, and even hallucinations. Though sometimes HACE develops without any prior symptoms of AMS, sometimes AMS is a precursor to HACE.

For that reason, it is important to monitor a person with AMS and not to ascend to a higher altitude until AMS symptoms have passed, which could be anywhere from a few hours to a few days. The treatment for HACE is beyond the scope of this book. Primarily, anyone suffering from HACE should be evacuated to lower altitude and higher care immediately.

CLIMB WITH CAUTION

To prevent altitude-related injury, in particular pulmonary or cerebral edema, pay attention to the altitude at which you spend the night. Limiting your ascent to 1,500 feet per 24-hour period is normally considered safe, and even conservative. If, for example, you ascend 3,000 feet during the day but descend 1,500 feet to your overnight location, you are still keeping your ascent within those conservative safety margins.

CHAPTER 12

VENOMS AND POISONS

Many people are both frightened and fascinated by the topic of venomous bites and stings from snakes and insects. As with most of the treatment protocols discussed in this book, there are two approaches: the basic first-aid response and the use of plant medicine. These approaches are not mutually exclusive; in fact, they build on each other. Unfortunately, the more dangerous the injury, the wider the range of treatment information seems to be, from proven protocols to folklore. This chapter aims to sort fact from fiction, based on my experience.

VENOMOUS SNAKEBITES

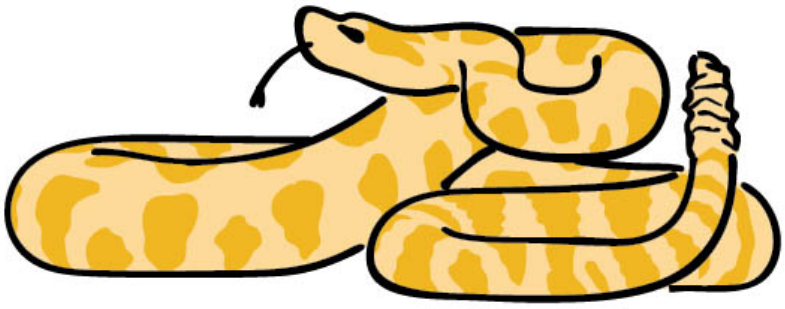
It is a good idea to review what kind of snakes you may encounter before you head into snake country. Four types of

venomous snakes are native to the United States. Rattlesnakes, cottonmouths (a.k.a. water moccasins), and copperheads are pit vipers, meaning they have a sensory organ (a “pit” between their eyes and nostrils) that enables them to locate prey. The fourth type is the coral snake, which has showy red, yellow, and black rings (identified in the popular saying, “Red on yellow kills a fellow; red on black, venom lack”).

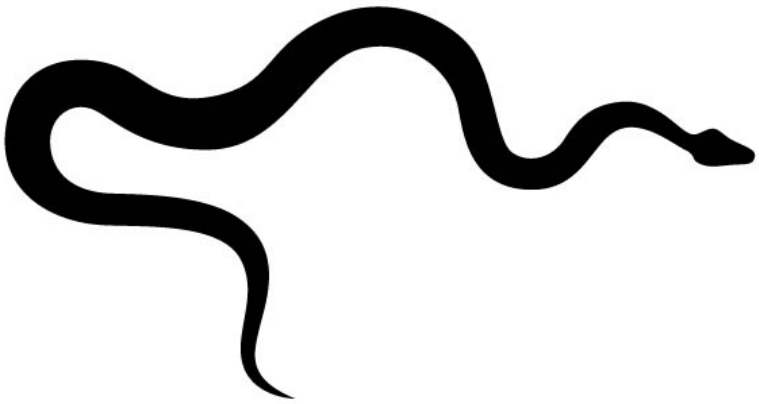
Out of this group, copperheads are statistically the most likely to bite, but rattlesnake venom is the most potentially damaging (or even fatal). Pit vipers have fangs that deliver poison to their target instantly upon contact. However, being bitten by a snake does not equal envenomation, nor does full envenomation equal death. At least one-fifth of all rattlesnake bites are “dry” (containing no venom), and another 30 to 40 percent involve only light envenomation. Most bites are not fatal, though that fact is not meant to minimize the seriousness of the situation.

It is important to note that well over 50 percent of snakebites in the United States occur while a person is handling or interacting with a snake. If you are aware and careful where you tread, where you put your hands if you’re climbing, and what is around you, you can avoid being bitten in the first place, which is a far better protocol than any herbal remedy or antivenin.

VENOMOUS SNAKES OF THE UNITED STATES

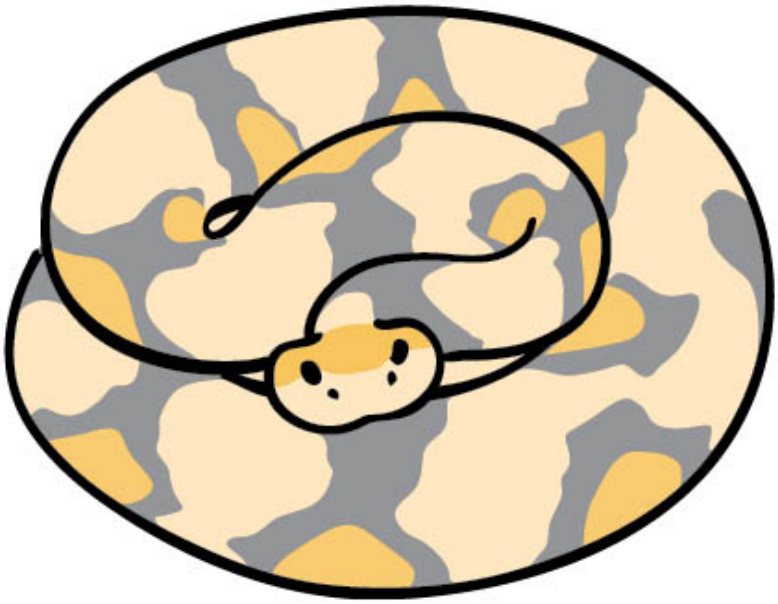


ABOVE: *Rattlesnake*



ABOVE: *Cottonmouth*

ABOVE: *Coral snake*



ABOVE: *Copperhead*

PATHOPHYSIOLOGY

Snake venom can contain hemotoxins (which damage muscle tissue and the blood), neurotoxins (damaging to the nerves),

and cytotoxins (damaging to cells). The general rule of thumb is that pit vipers produce more hemotoxins and the coral snake more neurotoxins. The venom makes its way rapidly into the damaged tissue.

There are systemic and local complications that at the worst can result in compartment syndrome (muscle swelling inside the fascia to the point that circulation is stopped and the tissue becomes necrotic) or death from shock-related issues. However, these are the exception, not the rule, and although you should always seek higher care immediately, it is certainly possible to deal with a venomous snakebite using basic first aid, common sense, and plant medicine when higher care is not available.

FIRST RESPONSE

The most critical response is to keep the victim calm, with their heart rate as low as possible, to slow the spread of the venom. Remove constrictive clothing or jewelry around the bite site, looking carefully for venom, which can be clear to yellowish, to determine the extent of envenomation. Clean the wound with soap and water. If the bite is on a leg or arm, keep weight off that extremity. Have the victim hydrate very well and monitor for shock.

Assess the situation using the following questions:

Was the snake poisonous?

If possible, take a picture of the snake for future reference. Be aware that a dead snake can still move and even bite.

What is the size and age of the victim?

The effect of the poison will be in proportion to the size of the victim, so young children are particularly vulnerable.

Are there any signs of envenomation?

Look for a large amount of swelling in the area within minutes of the bite (measure the circumference of the extremity every 15 minutes). A lack of blood clotting around the wound is a sign specific to pit vipers.

Is the victim experiencing any effects of envenomation?

Signs include weakness, nausea or vomiting, tingling or numbness of the extremity, fainting or dizziness, a coppery taste in the mouth.

How much pain (local and systemic) is there?

A venomous bite is generally more painful than a nonvenomous one.

Is there bruising, and is it growing?

Outline bruise patterns with a marker, if possible, to track growth.

PLANT MEDICINE FOR SNAKEBITES

With any treatment, our first aim is to neutralize the poison or its ability to spread. The goal is to prevent tissue destruction, inhibit the toxic enzymes in the poison, and counter hemotoxicity. We also want to delay or counter local inflammation. All of the herbs discussed here are best applied topically as well as taken internally.

Activated charcoal taken internally (but separated from any internal dosages of herbs by about an hour) may be indicated at the point that the victim starts to become nauseated. This may happen as the fat-soluble compounds in the venom make their way from the liver into the digestive tract. See more on using activated charcoal. However, taking charcoal internally will not help with counteracting the actual venom at the site of the bite. Charcoal will not cross from the gut into the bloodstream.

Sooner or later, some venom will make its way into the bloodstream and the body will try to break it down and excrete it. The organs most affected at this stage are typically the kidneys, the liver, and the heart. We can support these organs with many herbs. Lymph support, which enhances detoxification processes, would not be amiss either. See Chapter 4 for a discussion of herbs that support these systems.

Drawing the Poison

If it were possible to create contact between all the damaged tissue, charcoal would be a fantastic resource to clean out a snakebite wound. In the case of a fresh snakebite wound that is more of a laceration than a puncture, it may be worth trying a poultice of activated charcoal and water for an hour or so—especially in the absence of other plants that work as a drawing poultice. However, because the puncture wounds are so small and the toxin begins to create damage so rapidly, the efficacy of a charcoal poultice is questionable. Soaking the site in a thin charcoal slurry for 30 to 60 minutes may offer a better chance of penetrating a small bite wound.

Toxin-drawing plants include plantain (*Plantago* spp.) and prickly pear cactus (*Opuntia* spp.), with the latter being by far my favorite. I have had great success treating pit viper bites by alternating between topical applications of the enzyme-inhibiting herbs mentioned below and prickly pear pad. See more about using prickly pear as a poultice.

Counteracting the Bite Enzymes

One of the most important steps is to counteract one of the major enzymes in snake venom, hyaluronidase, which breaks down the extracellular matrix to allow venom to spread through the bloodstream. Echinacea (in particular, *Echinacea angustifolia*) root and turmeric (*Curcuma longa*) inhibit hyaluronidase and can be applied as a poultice, or if you have the roots, you can slice them and place them directly on the wound. Another potent hyaluronidase inhibitor is the chlorogenic acid found in green (unroasted) coffee. Buy unroasted beans (roasting degrades the chlorogenic acid),

grind them, and percolate with 95 percent ABV alcohol to make a coffee tincture.

Echinacea, turmeric, and green coffee can be formulated together or used individually. Topical application should be your first concern. Bathing the bite area with a tincture is probably the most practical method; simply soak gauze with the tincture and place it over the bite. If the bite wounds are large enough, you can drip the tincture into the wound. In addition to application around the bite site, these herbs should be taken orally in high doses, as noted in the treatment protocol below.

HERBAL SNAKEBITE KIT

If you live in snake territory (as I do), I think it prudent to carry an herbal snakebite kit. I include activated charcoal powder (finely ground) and a combined extract of *Echinacea angustifolia* and *E. purpurea* (a multifractional extract). I also carry powdered echinacea, turmeric, green coffee, and one or more of the other herbs listed at right either encapsulated or as a raw powder, so that I can easily make a poultice, which is vitally important in the treatment of a snakebite.

Echinacea has an incredible ability to clear toxic heat. I have used it for brown recluse spider bites on the extremities (and also diabetic ulcers) with profound and very rapid results. Its effect may be directly related to its hyaluronidase-inhibiting activity, which greatly decreases

the inflammation and cellular permeability that lead to tissue structure weakness and massive proliferation of the venom.

Herbs for Tissue Damage and Wound Inflammation

- Andrographis—highly anti-inflammatory against edema from pit viper venom
- Indian camphorweed (*Pluchea indica*)—neutralizes hemotoxic effects
- Indian sarsaparilla (*Hemidesmus indicus*)—neutralizes hemotoxic effects of pit viper venom
- Oak—inhibits hemorrhagic and dermonecrotic activity as well, as inflammation
- Pomegranate rind—inhibits neurotoxins found in the venom of the coral snake, as well as the Mojave rattler
- Self-heal—supports the repair of blood vessels and tissue in the area

HERBAL SNAKEBITE PROTOCOL

This protocol uses echinacea, turmeric, and/or green coffee (abbreviated together as ETG), depending on what you have available. A plaster could consist of one, two, or all three.

TOPICAL TREATMENT. After cleaning the wound, place an ETG plaster or poultice directly on the bite site. Change it out every 10 to 20 minutes for at least the first few hours.

If the bite wound is large enough (e.g., a laceration rather than puncture wounds), consider alternating a charcoal slurry or plaster (see here) with the ETG plaster for the first few hours.

If prickly pear is available, alternate plasters of prickly pear and ETG, in 5- to 10-minute intervals, for up to several hours, as needed (that is, for as long as this treatment appears to be reducing swelling and pain).

If any areas other than the bite site are showing swelling, apply (topically) one or more of the herbs for local inflammation and swelling discussed here.

Internal Treatment

Administer ETG (of these, echinacea is the most important) internally in a strong tincture, starting as soon as possible. Dosage is in the range of 0.5 ml per kilogram of body weight of the victim per day for at least 2 or 3 days. This is about 50 ml (10 teaspoons) per day for a 220-pound (100 kg) adult, which may cause nausea. If the victim immediately becomes nauseous, back off the dosage to whatever can be tolerated.

Administer the following herbal formulas, in tincture form, for support of affected organs:

- Liver support: milk thistle and dandelion root
- Kidney support: goldenrod and nettle root

- Cardiac support: red sage, hawthorn, and self-heal

Give each of these formulas at an adult dose of ½ to 1 teaspoon (per formula), once or twice per day.

Beginning a day or so after the bite—and offset by at least an hour or two from any internal herbal dosages—consider giving the victim charcoal internally once per day for 3 to 4 days.

The obvious question is: "How long should I continue this protocol?" The answer is, "It depends." Monitor the snakebite victim for several days and watch for local and systemic symptoms. Venom can take a long time to move through different layers and types of tissue. In treating one brown recluse spider bite, for example, I was able to clear up the infected, ulcerated wound within a few days, but a week later, my patient began to experience neurological symptoms. So I recommend being conservative and continuing this or some form of herbal protocol for at least several days past the point that symptoms have subsided.

WHAT NOT TO DO

I've been researching snakebite treatment for years, without finding any definitive answers outside of keeping the victim calm and transporting them to the hospital, where they can be treated with antivenin, which, by the way, is extremely expensive and intensely painful, does not guarantee a cure, and can cause severe reactions. The following methods are

sometimes touted as being effective treatments in a field situation. However, in most cases, they will probably do more harm than good.

KEEP THE BITTEN EXTREMITY LOWER THAN THE HEART. This may be helpful, or it may not. On the one hand, it keeps the toxin from becoming systemic too quickly (causing shock and systemic issues). On the other hand, it may pool the toxin in the extremity, where it will do more damage locally (causing compartment syndrome and tissue death). Generally, if higher care is available, it is best to keep the extremity lower than the heart while keeping the patient as still as possible and transporting them to higher care.

TREAT WITH ICE. While short-term treatment (less than 10 minutes) with ice might help a little with the initial swelling and pain, you do not want to limit circulation to connective tissue and muscle, which could possibly exacerbate tissue damage due to lack of circulation, clotting, and other toxic reactions that are already occurring.

PRESSURE IMMOBILIZATION. Placing a pressure bandage around the area and then splinting and immobilizing the extremity has been shown to be effective in Australia with sea snakes and other elapids (snakes of the Elapidae family), of which the coral snake is a member. This technique may be effective field treatment for coral snake bites, but bear in mind several things:

- It is important to achieve the proper amount of pressure for an effective wrap of this type.

- Research in the United States with rattlesnake venom has shown this method to be effective at preventing full systemic involvement, but it creates a higher incidence of compartment syndrome.
- The effectiveness in Australia has been only in field environments where the compression wrap was then removed in a hospital setting carefully and during antivenin administration. Sooner or later, the pressure wrap has to come off, and at that point the venom will start to spread and become systemic.
- Once the limb is immobilized, it cannot bear weight, so this victim must be carried if moving is necessary.

VENOUS TOURNIQUET. This concept is similar to pressure immobilization, but it's untested and likely more dangerous.

SNAKEBITE EXTRACTION KITS. Many people tout venom extractor pumps as an effective method of treating venomous snakebites. I don't have experience with them myself, but several independent studies available on the National Institute of Health's resource site have shown at least one popular model to be ineffective when applied shortly after a bite.

CUT AND SUCK. Making incisions around or above the bite area and sucking out the toxin causes tissue damage, will create more inflammation and tissue permeability, and may initiate bleeding that will be difficult to stop. It is also unlikely to extract venom that has already permeated the surrounding tissue.

SPIDER BITES

Spider bites can present in a variety of symptoms, including redness, pain, swelling, heat, ulceration with necrotic tissue, nausea and vomiting, headache, blistering, and muscle pain. It is usually more effective to treat the symptoms than to worry about what specific type of spider may have bitten the victim (or even whether the bite comes from a spider versus another type of insect).

Herbs can be very effective in dealing with spider bites, and in particular for treating the necrotic ulcerations that happen with bites from brown recluse spiders. An ulceration may take a while to become visible after a bite; it will present with a dark, necrotic center and an indentation of tissue (the ulcer) that is usually red and looks slightly infected around the edges.

Ulcerations from spider venom can be treated very effectively using *Echinacea angustifolia* root and prickly pear pad, as discussed for snakebites. Other herbs to consider are chaparral (*Larrea tridentata*) and plantain (*Plantago* spp.), which are particularly effective in inhibiting enzyme activity with spider bites. These herbs should be applied topically as a plaster or poultice. A plaster of activated charcoal and/or bentonite clay is also indicated to help clean out the bite wound.

Finally, kidney, nerve, and liver support are indicated following a venomous bite of any kind. See Chapter 4 for more discussion about how to support these organ systems.

INSECT BITES AND STINGS

The first concern with insect bites and stings is allergic reaction. Anaphylaxis is a life-threatening condition, and the victim should be watched closely for severe swelling, rash, itching, and blisters around the bite site, as well as any facial swelling. See here for dealing with anaphylaxis in a situation where epinephrine or other pharmaceuticals are not available.

If anaphylaxis is not an issue, we can use many of the same herbs already discussed for relief of pain and swelling around the bite site. These herbs will be most effective when applied topically, such as in a plaster or poultice. In my experience, it is most effective to allow the plant material to directly contact the skin as a plaster. Some of the plants we can use are:

- Aloe
- Burdock leaf
- Marshmallow
- Mullein
- Plantain
- Prickly pear

If there is a stinger in place, scrape it away using a flat scraper such as the edge of a credit card. Then clean the bite or sting area well and apply the plaster or poultice.

Bentonite clay and charcoal are also very helpful. In fact, if the bite is an open wound, consider using charcoal above all the other choices, due to its ability to adsorb microtoxins and bacteria that might cause an infection.

POISON IVY, POISON OAK, AND CONTACT DERMATITIS

Probably somewhere in the realm of 80 percent of humans are allergic to urushiol, the oil contained in poison ivy, poison oak, and poison sumac that causes the uncomfortable, itchy rash. This type of hypersensitivity reaction requires an initial reaction from your immune system to establish the allergy, so you may think you are not sensitive to it because you didn't react the first time you came into contact. Beware, as the next time may go differently!

If you brush against one of these plants, washing your skin within 20 to 30 minutes should greatly minimize any reaction. The oil can stay on clothing for months or even years if not washed or wiped away, however. So if you brush up against it with a jacket that you then hang in the closet for several months, you might still end up with a minor reaction from the oil when you next pull the jacket out and brush your skin against that spot. Dogs are famous for running through stands of poison oak and then coming back to rub their urushiol-coated fur against their favorite human companion.

The reaction usually takes several hours, or even a day or more, to present and normally starts out as a weepy rash that is very itchy. Over the course of a few weeks it will slowly dry up and crust over. If you are highly sensitive, scratching may spread the rash, especially if you are scratching before you have cleaned all of the oil off your skin. Take care not to touch the itchy area and then touch sensitive spots on your body,

such as your eyes, mouth, or groin area, without washing thoroughly first.

To initially clean off an area affected by urushiol, any type of soap that breaks up oils will work. Warm (not hot) water works well without opening up pores too much. Wiping off the area with a clean, dry cloth or towel afterward is also helpful.

For a full-blown rash over much of an extremity or even much of the body, herbs are not going to be anywhere near as effective as pharmaceutical treatment (steroids). However, for smaller rashes that are not as severe, topical herbs can greatly reduce the reaction.

Herbs with anti-inflammatory properties will provide some relief topically. If the affected area is wet and weepy, any astringent herb will also be helpful. The same holds true for astringent solvents, such as isopropyl alcohol, apple cider vinegar, witch hazel solution, or ethyl alcohol, which can be used as the base for liniments or tinctures that will be applied topically. If the affected area has dried and is crusty, then an infused oil is more useful.

Here are some of the remedies I have found most useful over the years.

- Aloe—relieves itching and inflammation
- Apple cider vinegar—dries weepy rashes
- Calcium bentonite (green bentonite clay)—drying; mix with filtered or distilled water and apply as a plaster to weepy rashes
- Gumweed—mast cell inhibitor and highly anti-inflammatory; my absolute favorite for contact dermatitis at

any stage

- Jewelweed—demulcent; relieves inflammation and itching
- Oats—relieves itching; grind rolled oats and add to a warm bath
- Plantain—soothes and diminishes itching, inflammation, and rash; useful at any stage of the reaction
- Prickly pear—relieves inflammation and itching; scrape out the inside of the pad and apply the goo directly to the skin
- Witch hazel—excellent astringent for the weepy phase of the reaction
- Yarrow—decent astringent for the weepy phase

CHAPTER 13

VIRAL AND BACTERIAL INFECTIONS

Microbes are everywhere: in the food we eat, the air we breathe, and the ground we walk on. They're on our skin and in our bodies. Our survival depends on them. And pathogens—microorganisms that cause disease—are an integral part of that microbial community. Human beings need some level of exposure to them and the robust response they provoke in our immune system.

Looking at the bigger picture, I maintain that the presence of pathogenic microorganisms is essential to the cooperation and community among microbes that is fundamental to life itself. In that regard, one of the most fascinating organisms underlying our microbial reality is the virus.

VIRAL INFECTIONS

Viruses consist of two primary components: their DNA or RNA and a protein sheath (capsid) that protects and influences their genes. Viruses do not contain any intrinsic mechanism for growth or reproduction. They must infect living cells in order to do either of those things, and for that reason, controversy abounds as to whether or not they are "alive." Though it's irrelevant to me as an herbalist, I have no doubt that viruses are living, sentient organisms. They work to achieve survival.

They have biological and behavioral intricacies so far-reaching that they affect host behavior (well beyond the coughing and sneezing that a cold or flu virus causes). In fact, it is arguable that their intelligence is far greater than humankind's. After all, humans are the only species that readily destroys not only itself but the environment it depends on for survival.

HOW VIRUSES REPRODUCE

1. The viral genomes enter a host cell.
2. The virus takes over the host cell's genetic transcription and translation machinery.
3. The virus uses host cell building blocks to copy viral genomes and synthesize viral proteins.
4. The resulting viral genomes and proteins then self-assemble and exit host cells as new infectious particles, a process referred to as "shedding."

TWO POWERFUL HERBS

Chaparral and wild indigo are two of my favorite antiviral herbs because of their broad-spectrum effects across various viral pathologies and their consistent effect across patients.

Chaparral (*Larrea* spp.)

Useful against viruses in the herpes family, such as herpes simplex (HSV-1 and HSV-2) and shingles, this herb contains the lignan nordihydroguaiaretic acid (NDGA), as well as the flavonoids quercetin, kaempferol, and apigenin. These constituents, among others, play a large role in its antiviral activity.

In my clinical experience, chaparral has been phenomenal. The tincture, infusion, oil, or salve can be directly applied to herpes sores. It is very drying and energetically cold, even when used as an oil or salve. It is best used in a formula rather than alone, depending on how much drying you want to occur.

With internal use, the potential for liver toxicity is high (probably primarily due to the NDGA). Some herbalists feel it is too toxic to use internally, though I feel it can be used with care, particularly in formulas, and in small doses ranging from 5 to 30 drops depending on the weight of the client and the severity of the health concern. I generally do not recommend using it internally for any longer than 7 days. Usually only a few days of treatment are required. Signs of taking too much can include itching and feeling flushed and irritable.

When tincturing chaparral, use a high-percentage (90+ percent ABV) alcohol. I find even better results with multifractional extracts combining a water-and-glycerin decoction with an alcohol percolation. Alcohol salves are very effective as well. (See Chapter 5 for more details on making medicine.)

Wild Indigo (*Baptisia tinctoria*)

Useful against influenza, HSV-1 and HSV-2, and possibly some strains of hemorrhagic fever, wild indigo can also be effective for smoking cessation (it contains cytisine, which binds with nicotinic acetylcholine receptors), immunomodulation, and much more. Its antiviral properties arise possibly in part from tyrosine kinase inhibition (due to its constituent genistein), which blocks viral replication. It was historically used for septic, ulcerated sores or wounds, even gangrene.

Wild indigo can be used externally and internally, but it is on the upper end of the toxicity scale and must be used internally with caution. In the case of flu and HSV viral infections, I use it in formulas only, and usually about ¼ to ½ teaspoon per adult dose depending on size of the person. This is a little on the strong side and it is important to watch for signs of nausea or start with a lower, dropwise dosage with anyone who may be sensitive to it.

ANTIVIRAL HERBAL FORMULAS

The following tables are not meant to be all-inclusive formulas. Rather, they suggest herbs that address the range of issues that arise with particular kinds of viral infections. Bear in mind that this is a Western approach to acute care. If, for instance, you experience HSV-1 outbreaks as cold sores every 2 weeks, there are undoubtedly nutritional and lifestyle changes to consider, rather than depending on a quick-fix herbal approach. However, especially in a post-disaster or remote environment, the first objective is to get well as quickly as possible while also palliating symptoms. The herbs in these tables can be used to do just that.

FORMULATION AND DOSAGE. All of the herbs in these charts can be formulated in a 1:1 ratio (that is, roughly equal parts), except chaparral, for which exceptions are noted. The formulas are meant to be tinctured, and the standard adult dosage of the finished tincture blend will be ½ to 1 teaspoon taken three to five times per day.

Herbs for Treating Colds and Flus

This is not a list of every herb that is effective for colds and flus (there are so many more), nor am I suggesting that you use every herb listed here. This is a selection of herbs that I find work well together. Choose from among them as you please, depending on what you need. (See also Cold and Flu Formula.)

Herb	Purpose in the Formula

Bee balm	• Eliminative • Dries up phlegm; helps especially with the sinuses • Diuretic
Boneset	• Smooth muscle relaxant; helps with muscle aches • Promotes sweating; helps with fever management • Peripheral vasodilator • Digestive bitter
Echinacea	• Immune stimulant
Elder	• Immune stimulant • Respiratory expectorant • Eliminative
Goldenrod	• Helps dry up a runny nose and excessive phlegm • Analgesic; helps with muscle aches • Diuretic

Marshmallow root	• Stimulates mucosal immune activity • Mucosal vulnerary • Relaxing expectorant
Pleurisy root	• Mucosal vulnerary • Immune supportive • Relaxing expectorant
Prickly ash	• Eliminative • Immune stimulant • Analgesic; helps with muscle aches • Increases microcirculation
Spilanthes	• Immune stimulant • Increases microcirculation (especially sinuses)
Wild indigo	• Antiviral (see above for more on wild indigo) • Immune stimulant
Yarrow	• Eliminative • General anti-inflammatory

Herbs for Treating Shingles, HSV-1, and HSV-2

In concert with nutritional support, these herbs work well to help the body heal from shingles, HSV-1, and HSV-2 infections. For external use, prepare these herbs as an infused oil (see here) that is applied topically to the affected areas prior to, during, and for at least a few days after the outbreak. To make a tincture for internal use, formulate these herbs (excluding comfrey and propolis) in a 1:1 ratio, with the exception of chaparral, as noted below. (See also Herpes Family Virus Formula.)

Herb	Purpose in the Formula
Chaparral Note: For internal use, add just 2–3 drops of chaparral tincture per milliliter of the finished formula.	• Antiviral (see more on chaparral) • Tissue proliferative • Anti-inflammatory
Comfrey Note: For topical use only	• Tissue proliferative • Vulnerary
Feverfew	• Antiviral • Anti-inflammatory

Japanese dogwood	• Helps regenerate and support nerve tissue (myelin sheath)
Lemon balm	• Relieves nerve pain • Reduces swelling • Antiviral (HSV)
Lion's mane	• Helps regenerate and support nerve tissue (myelin sheath)
Ox knee	• Anti-inflammatory • Helps regenerate and support nerve tissue (myelin sheath)
Propolis Note: For topical use only	• Antiviral • Anti-inflammatory
Saint John's wort	• Nervine (relieves anxiety, stress, tension, pain)
Self-heal	• Tissue reparative

Wild indigo	• Antiviral (see more on wild indigo)

Herbs for Treating EV-D68, MERS, and SARS

Enterovirus D68, Middle East respiratory syndrome, and severe acute respiratory syndrome are three of a litany of ongoing respiratory viral infections that make their way across the world in various cycles. EV-D68 causes symptoms similar to those of the common cold, though it can be a far more severe infection. MERS and SARS are coronaviruses (as are about a third of the common cold viruses), a family of viruses named after the spiky crownlike halo surrounding the membrane proteins. (For a discussion of the 2020 novel coronavirus [COVID-19], see here.)

Herb	Purpose in the Formula
Astragalus	• Antiviral • Immune supportive
Licorice	• Mucosal vulnerary • Immune supportive • Relaxing expectorant

Marshmallow root	• Mucosal vulnerary • Relaxing expectorant
Pleurisy root	• Mucosal vulnerary • Immune supportive • Relaxing expectorant
Prickly ash	• Eliminative • Immune supportive • Increases microcirculation • Antiviral
Yerba mansa	• Respiratory antimicrobial support

Herbs for Treating Dengue Fever

Dengue fever is a mosquito-borne virus that is normally found in tropical areas but has slowly been making its way northward into the southern United States. It used to be called “breakbone fever” due to the severe joint pain that can accompany the illness. Symptoms can range from mild to severe. The classic symptoms are severe joint pain, fever, headaches (especially behind eyes), nausea and vomiting, and rash. In rare cases, this disease may progress to dengue hemorrhagic fever, which can be fatal.

Herb	Purpose in the Formula
Baikal skullcap	• Antiviral (due to its baicalin)
Boneset	• Antiviral • Anti-inflammatory
Dahurian angelica	• Eliminative • Increases baicalin levels in the bloodstream (when taken with Baikal skullcap)
Elder	• Antiviral
Licorice	• Mucosal vulnerary • Immune supportive • Relaxing expectorant
Papaya leaf	• Increases platelet count (especially useful in cases of hemorrhagic fever)
Prickly ash	• Eliminative • Immune supportive • Increases microcirculation • Antiviral

Herbs for Treating Viral Gastroenteritis

Viral gastroenteritis is a viral infection of the gut that normally results in nausea, vomiting, abdominal pain and cramps, low-grade fever, muscle aches, and malaise.

Herb	Purpose in the Formula
Any berberine-containing herbs (see here), such as algerita, goldenseal root, or Oregon grape root	• Antiviral • Astringent for gut mucosa • Antidiarrheal • Anti-inflammatory for gut mucosa
Agrimony	• Astringent for gut mucosa • Antidiarrheal
Algerita leaf	• Anti-nauseal
Chamomile	• Anti-inflammatory for gut mucosa
Charcoal	• Adsorbent (give at least 1 to 2 hours separately from herbs; see here)
Ginger	• Eliminative • Anti-nauseal

AN HERBAL PROTOCOL FOR COVID-19

SARS-coronavirus-2 (SARS-CoV-2) has created the largest pandemic response across the globe of any virus in my lifetime. This novel virus had just begun to move through the United States as I was writing this book, and this discussion is based on my experience with approximately 40 cases when we went to print. The therapies I am using for the infection it causes, COVID-19, are based on my past experience with other respiratory viruses, the general physiological effects of herbs regardless of the pathogen, research, and some conjecture.

The effects of this virus can range from no symptoms at all to death. Hypertension, obesity, diabetes, chronic respiratory disease, and age all seem to be factors that play a role in the severity of the symptoms.

Symptoms can show up in one body system after another. For instance, a person may start out with a dry cough and fever, then develop diarrhea, headache, fatigue, and so on. Treatment can be almost like the old arcade game of whack-a-mole, chasing symptoms away from one area only to have new symptoms appear hours or a day later in another area.

In my experience, though, using herbal medicine with my COVID-19 patients, each time symptoms reappear they seem to be less severe. While “chasing symptoms” with herbs is not always the best approach to healing, in an acute infectious disease like this one, it may be the most effective manner to

deal with the virus as it attacks the respiratory tract, the digestive system, and possibly even the red blood cells.

In addition to good nutrition, supplemental vitamins and minerals (especially vitamin C, vitamin D3, vitamin E, and zinc), stress management, and plenty of rest, we can use herbs to help our bodies deal with the different stages of this virus. You can begin this protocol even without positive confirmation of infection with SARS-CoV-2 by testing. If the infection turns out to be not COVID-19 but some other type of virus, like influenza, most of these herbs will still be effective. There's a lot of overlap in the way these herbs support the immune and other body systems in different types of infections.

STAGE 1: POSSIBLE EXPOSURE

At this stage, you may know that you have been exposed to COVID-19, or you're simply feeling run down, with respiratory or digestive issues, and you're wondering whether you are sick with COVID-19 or some other kind of flulike virus. Consider a tincture of all or some of the following herbs, formulated in a 1:1 ratio (that is, roughly equal parts), to support the immune, respiratory, and digestive systems. Take ½ teaspoon of the formula three times per day.

- Any berberine-containing herbs (see here), such as algerita, goldenseal, or Oregon grape root. These herbs are astringent and anti-inflammatory in the gut, with antidiarrheal effects. Take them only in cases of diarrhea.

- Andrographis. Useful for both gut inflammation and diarrhea, as well as immune support. Possibly (theoretically) antiviral for SARS-CoV-2. This herb is very bitter, and some people may find it difficult to take as a tincture or even glycerite; in that case, it can be encapsulated.
- Astragalus. Adaptive immune system support.
- Echinacea. For immune stimulation and support. Echinacea has very strong effects in the initial exposure stage. While it is not useful in later stages of COVID-19, I do not feel that it is contraindicated, as some people have suggested.
- Elder flower and/or berry. Supports the immune system and respiratory tract; may have antiviral properties. The leaf and bark can be used as well but should be decocted for 30 to 60 minutes as part of their preparation to degrade the cyanogenic glycosides. Elder is not contraindicated in later stages of this illness. Despite some speculation to the contrary, it does not carry a risk of causing a cytokine storm.
- Plantain. Mucosal vulnerary for the gut and respiratory tract. Supports the respiratory system, liver, and kidneys.
- Pleurisy root. Respiratory support, expectorant, and lymph mover.
- Thyme. Supports respiratory cilia cells; respiratory expectorant.
- White horehound. Excellent respiratory support and relaxing expectorant, while also being a digestive bitter and useful for nausea and mild diarrhea.

STAGE 2: ONSET OF SYMPTOMS

These can include fever and dry cough, fatigue, sore muscles, chills, sore throat, loss of taste or smell, lack of appetite, and diarrhea. Shortness of breath, cyanosis (bluish color around the lips or mucous membranes), and pain or a feeling of pressure on the chest are serious signs and require immediate higher care by a licensed health care practitioner.

To support the body's ability to deal with this stage of the viral infection, we want to use herbs that support the respiratory tract, the liver, the kidneys, and, in the case of diarrhea and nausea, the gut. Melatonin may also be helpful for short-term use (less than 6 weeks) in adult dosages of less than 10 mg per day.

Formulate some or all of the following herbs in a 1:1 ratio (that is, roughly equal parts) in a tincture. The dosage for an adult is ½ to 1 teaspoon of the formula three to six times per day. Or, if you have dried herbs, try taking them (still in a 1:1 ratio) as a steam inhalation to get them directly in contact with the respiratory system: Put anywhere from a few tablespoons to 1 cup of dried herbs in a pan and pour 2 to 3 cups of boiling water over them (just like making a big pan of tea). Lean over the pan, cover your head and the pan with a towel, and inhale the steam for 15 to 90 seconds, depending on how it feels. Come out for a cool breath and then repeat until the steam dissipates.

- Baikal skullcap. Anti-inflammatory for the respiratory tract, liver supportive, and antidiarrheal; may have antiviral properties. Also contains small amount of melatonin.

- Elder flower and/or berry. Supports the immune system and respiratory tract; may have antiviral properties.
- Feverfew. Analgesic and anti-inflammatory; may have antiviral properties. Contains small amount of melatonin.
- Goldenrod. Respiratory and kidney support; anti-inflammatory.
- Plantain. Mucosal vulnerary for the gut and respiratory tract; respiratory support.
- Pleurisy root. Respiratory support, expectorant, and lymph mover.
- Thyme. Supports respiratory cilia cells; respiratory expectorant.
- Yerba santa. Respiratory support, relaxing expectorant, and bronchodilator; contains luteolin which appears to be a very strong inhibitor of the SARS-CoV-2 virus.

STAGE 3: CONFIRMED COVID-19

I'm defining stage 3 as the point at which it becomes clear that a person has COVID-19 based on the strength of the symptoms (and testing, if possible). The difference between stage 2 and stage 3 is in the intensity of the symptoms (persistent cough, fatigue, shortness of breath, fever, chills, possibly diarrhea). On a graph, stage 2 would be represented by a line rising to a peak, and stage 3 would be the peak.

In stage 3, very strong respiratory, liver, and kidney support is necessary, along with cardiovascular support. Steam

inhalation is an even more powerful delivery mechanism in this stage. Some herbs repeat from stage 2 to stage 3 because I feel they should be run for the full course of the illness. Alternatively, the stage 2 formula and stage 3 formula can be alternated daily or even per dose, based on their effectiveness.

With the exception of chaparral, the herbs listed below should be mixed in a 1:1 ratio (that is, roughly equal parts). Add chaparral to the formula at a ratio of about 2 drops per teaspoon of tincture, glycerite, infusion, or decoction. If you're preparing the herbs as a steam inhalation, however, you can use chaparral in the same 1:1 ratio as the other herbs.

- Any berberine-containing herb (see here), such as algerita, goldenseal, or Oregon grape root. These herbs are astringent and anti-inflammatory in the gut, with antidiarrheal effects. They also lend liver support. Use in the formula in cases of diarrhea (not necessary otherwise). My favorite, for COVID-19 and other uses, is algerita root and leaf in a 3:1 mix (75 percent root, 25 percent leaf).
- Chameleon plant. Strong respiratory anti-inflammatory and likely antiviral activity.
- Chaparral. Loosens phlegm extremely well; may be antiviral.
- Elecampane. Excellent expectorant; helps loosen phlegm and is also a respiratory support.
- Gumweed. Respiratory anti-inflammatory, bronchodilator, expectorant, and respiratory support.
- Milk thistle. Liver support.
- Nettle root. Kidney support.

- Red sage. Cardiovascular, anti-inflammatory, and endothelial cell support of the blood vessels.
- Sweet Annie. Smooth muscle relaxant and eliminative; may be antiviral.
- Thyme. Supports respiratory cilia cells; respiratory expectorant.
- Wild cherry bark. Respiratory anti-inflammatory, expectorant, and respiratory support.
- Yerba santa. Respiratory support, relaxing expectorant, and bronchodilator; may have antiviral properties.

STAGE 4: RECOVERY

In stage 4, we need to continue to strengthen the immune system as well as give support to mitochondria, the respiratory and cardiovascular systems, and the kidneys and liver.

Formulate some or all of the following herbs in a 1:1 ratio (that is, in roughly equal parts). The adult dosage of a tincture of this formula is ½ to 1 teaspoon two or three times per day.

- Ashwagandha. Mitochondrial support; supports healthful stress management.
- Cordyceps. Mitochondrial and kidney support.
- Ginseng. Mitochondrial and respiratory support.
- Hawthorn. Cardiovascular support.
- Lion's mane. Mitochondrial and nervous system support.
- Milk thistle. Liver support.

- Mullein leaf. Respiratory support.
- Parsley. Nutritional and kidney support.
- Red sage. Continued cardiovascular and endothelial cell support.

BACTERIAL INFECTIONS

In the body, bacteria exist primarily in one of two states: planktonic and biofilm. In the planktonic state, the bacteria are in single-celled form, floating and traveling through the liquid medium in the body. For pathogenic bacteria, the planktonic state is by far the least harmful to their human host.

The biofilm state illustrates a principle we see played out repeatedly: Many species group together for greater protection. In the case of bacteria, this means grouping together in colonies. Bacteria can also form a biofilm—an extracellular polymeric substance or "slime layer"—to protect their colony. As the bacteria attach to a surface in the body and begin to multiply, they actually change their gene expression to facilitate building this layer. During this time, they begin to communicate with each other through a process called *quorum sensing*, which allows them to regulate changes in gene expression and coordinate behavior within the colony.

As the biofilm reaches maturity, planktonic forms of the various biofilm inhabitants shed continuously, enabling further colonization of a bacterial infection. A biofilm is thought to be able to remain somewhat invisible to our own

immune system, which would explain chronic or recurring infections.

Via quorum sensing and planktonic “scouting” around a biofilm, the bacteria population knows when it may be time to expand the colony (resulting in an acute infection flare-up) or even leave the host to expand the infection into a larger population, as in the case of cholera (spread by fecal-oral contact).

The key points to remember here are that bacteria are much more susceptible to antibacterial compounds in their planktonic state than they are in their biofilm state, and that many bacterial infections (especially chronic) are caused by bacteria in a biofilm state. It is important to understand this distinction to clarify data that claims that a certain herb—or a certain constituent of an herb—is “antibacterial.” The tests that determine this level of antibacterial effect are almost always in vitro tests using planktonic bacteria. This creates a large misunderstanding about the actual effectiveness of an herb in relation to an infection in our body. Additionally, using this type of data as your baseline presupposes that the herb is directly in contact with the infected tissue, which is not always the case.

Nonetheless, understanding that an herb has direct antibacterial qualities is still very useful. In fact, pharmaceutical medicine mimics and synthesizes many antibacterial plant constituents in order to create antibiotics. Interestingly, bacteria themselves make some antibiotics that kill or suppress other species of bacteria, so that they become the dominant colony in a biofilm.

A bacterial infection—whether external (e.g., a wound infection) or internal (e.g., strep throat)—can present an extremely difficult medical situation and should usually be referred to higher care and antibiotics. However, that's not always possible, and knowing our alternatives in herbal medicine is important. In many cases, in fact, a minor bacterial infection can be easily turned around using herbs. And herbs can actually boost the effectiveness of pharmaceutical antibiotics, especially when biofilms are involved.

Working solely with herbs, we must consider a number of factors when dealing with an acute bacterial infection. The primary treatment approaches center on the following:

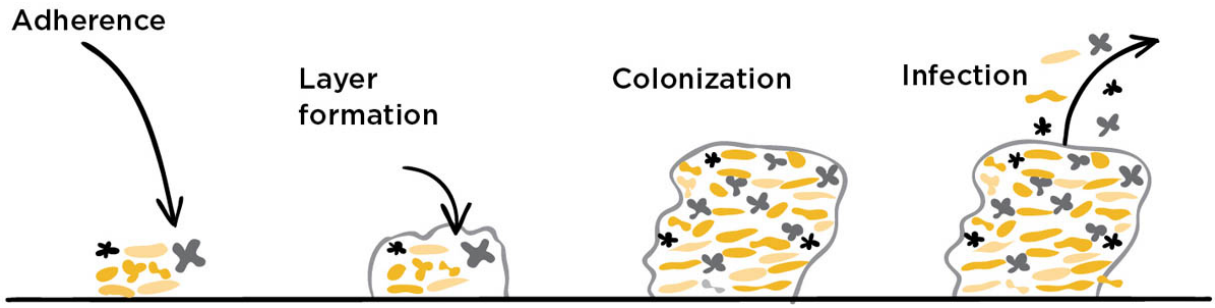
Direct antibacterial effects. Killing bacteria. We focus on herbs whose constituents work through one or more of a number of mechanisms and pathways to cause bacterial cell death.

Indirect antibacterial actions. Inhibiting or changing bacteria's ability to maintain either individual or colony defense against direct antibacterial effects of the same or other plants.

Support for the tissue terrain. Creating a healthy tissue state, one that is not conducive to bacterial growth, in and around an infected area.

Support for multifunctional homeostasis. Creating a balance across the endocrine and other body systems using medicinal herbs, improved nutrition, and lifestyle adjustments.

Integrating these approaches (and more) can enable the herbalist to achieve rapid and effective results when dealing even with antibiotic-resistant bacteria for many acute bacterial infections or with persistent antibiotic-resistant infections.



ABOVE: *Biofilm formation: bacteria adhere to a surface and develop a protective layer that allows further colonization and infection.*

Let's work through all of these approaches in detail and create a materia medica as well as a plan we can carry forward to help us deal with bacterial infections using only herbal medicine.

BERBERINE: AN IMPORTANT CONSTITUENT

Berberine is found in a number of species of plants throughout the world. It probably first became famous when used during a cholera outbreak in India in the late 1960s, where it proved more effective in shutting down

the epidemic than any pharmaceutical medications of the time.

Berberine is a powerful agent for fighting infections and has amazing effects on the gastrointestinal system in particular. In addition to being highly antibacterial, it is anti-inflammatory (especially for the gut mucosa) and has antiparasitic and antiprotozoal properties. It improves mitochondrial function, lowers blood pressure, regulates metabolism, lowers blood sugar and cholesterol levels, and has other helpful physiological functions throughout the body.

The big issue with berberine is that it does not absorb well across the gut wall into the bloodstream and therefore is difficult to deliver to other body systems. The most common usage of berberine-containing herbs is specifically for the gut and for direct application on infected tissue, such as a poultice. For treating other types of internal infections, such as UTIs or respiratory ailments, choose another method, such as sublingual, intranasal, enema, or inhalation via a nebulizer. There may be other ways to increase the bioavailability of berberine through the gut, such as formulating it with milk thistle or taking it with TPGS (tocopheryl polyethylene glycol succinate, a water-soluble form of vitamin E).

This constituent is more water soluble than alcohol soluble and should be tinctured at 40 percent ABV or lower (I use 30 percent with dried plant parts).

Plants that contain berberine include algerita and other barberries (*Berberis* spp.), goldenseal (*Hydrastis canadensis*), Oregon grape (*Mahonia* spp.), and yellowroot (*Xanthorhiza simplicissima*)—the latter is named for berberine's characteristic color.

DIRECT ANTIBACTERIAL EFFECTS

In the chart below are some potent herbal antibacterials and some of the planktonic bacteria they have been shown to destroy by a variety of mechanisms. Remember that these herbs have many other uses beyond simply these direct antibacterial actions.

Herbs with Direct Antibacterial Effects

Herb	Effective Against
Algerita root and leaf together (75 percent root, 25 percent leaf)	Methicillin-resistant *Staphylococcus aureus* (MRSA), *Clostridium difficile*, *Escherichia coli* Many gastrointestinal infections, staph infections on the skin, urinary tract infections, strep throat

Herbs with Direct Antibacterial Effects

Herb	Effective Against
Black walnut	*Bacillus cereus*, *Staphylococcus aureus*, *Escherichia coli*, *Klebsiella pneumoniae* Gut infections (such as initial small intestinal bacterial overgrowth protocol), staph infections on the skin, cellulitis, ulcerated (possibly staph) skin infections
Myrrh	*Escherichia coli*, *Staphylococcus aureus*, *Pseudomonas aeruginosa* Mouth and gum infections (including gingivitis, periodontitis, canker sores), urinary tract infections, external (probably staph) infections on the skin

Herbs with Direct Antibacterial Effects

Herb	Effective Against
Usnea	*Enterococcus faecalis*, *Staphylococcus aureus*, MRSA, *Mycobacterium tuberculosis*, *Streptococcus* spp. Urinary tract infections, pyelonephritis, strep throat, bacterial upper respiratory infections
Uva ursi leaf	*Neisseria gonorrhoeae*, *Staphylococcus aureus*, MRSA Urinary tract infections, pyelonephritis, sexually transmitted infections, staph infections on the skin

INDIRECT ANTIBACTERIAL EFFECTS

While a whole host of “other effects” of plant medicine could arguably be considered indirectly antibacterial, here I am

specifically referring to effects that break down bacteria's ability to defend themselves. With bacterial defenses deactivated, the body's immune system, pharmaceutical antibiotics, and/or plant constituents with direct antibacterial effects become more effective in fighting infection.

There are at least three major mechanisms by which herbs have indirect antibacterial effects: biofilm disruption, efflux pumping inhibition, and adhesin disruption.

Biofilm Disruption

In my opinion, any infection that has existed anywhere in the body for at least 72 hours (and in some cases possibly less than that) is probably in some growing state of biofilm colonization. Biofilm colonization should certainly be suspected in the case of any chronic or intermittent (chronic with acute flare-ups) infection, such as a recurring urinary tract infection, or chronic strep throat that recurs once or twice a year, or a sinus infection that never seems to completely go away.

As an example, look to the timeline of plaque (a biofilm) formation in the mouth. Early plaque formation is established within about 24 hours and is primarily populated by gram-positive, aerobic bacteria. Within 4 days, plaque is considered to be in a mature stage (it is usually fully mature within 7 days) and is populated by gram-negative bacteria, filaments, and spirochetes. Other research around biofilm formation in various locations throughout the body, both in humans and in farm animals, indicate initial biofilm formation within 24 hours.

Herbs that can disrupt a biofilm (often called "quorum-sensing inhibitors" or "biofilm busters") can greatly enhance the effectiveness of other antibacterial and even immunosupportive herbs. In general, they work by disrupting quorum sensing in biofilms through several mechanisms.

The following herbs appear to have a broad-spectrum biofilm-disrupting effect across a number of bacterial species, including *Pseudomonas aeruginosa, Escherichia coli, Chromobacterium violaceum,* and *Staphylococcus aureus*:

- Andrographis
- Baikal skullcap
- Dahurian angelica (increases the amount of bioavailable baicalin in the bloodstream)
- Dandelion leaf
- Feverfew
- Plantain
- Rosemary
- Uva ursi

Efflux Pumping Inhibition

Efflux pumping, a mechanism often referred to as a multiple drug resistance (MDR) pump, is a transporter in the cell membrane that bacteria use to defend against invading molecular compounds. There are several families of efflux pumps, and different bacteria tend to use one type or family of MDR pump more than others. For example, the NorA pump, one of the most studied, is used by *Staphylococcus aureus* and MRSA.

Plants that inhibit various MDR pumps greatly enhance the ability of other direct antibacterial compounds to have their

effect. One well-known efflux pump inhibitor is MHC (5'-methoxyhydnocarpin), which usually is found in the roots and leaves of berberine-containing plants like goldenseal root and Oregon grape root. By inhibiting the NorA efflux pump, MHC can increase the effectiveness of berberine up to 16 times.

ABOVE: *Milk thistle*

Here are some of the herbs that are known to inhibit efflux pumping, and the type(s) of pumps that they inhibit:

- Barberry—contains MHC, which inhibits the NorA efflux pump in *Staphylococcus aureus* and MRSA

- Cayenne—contains capsaicin, which inhibits the NorA efflux pump in *Staphylococcus aureus* and MRSA
- Indian snakeroot—contains reserpine, which inhibits the Bmr efflux pump in *Bacillus subtilis* and the Tet(K) efflux pump in MRSA
- Milk thistle—inhibits the NorA efflux pump in *Staphylococcus aureus* and MRSA
- Oregon grape—contains MHC, which inhibits the NorA efflux pump in *Staphylococcus aureus* and MRSA
- Purple cluster geranium (*Geranium caespitosum*, and probably other species as well)—inhibits the NorA efflux pump in *Staphylococcus aureus* and MRSA
- Silvery lupine—contains genistein, orobol, and biochanin A, which inhibit the NorA efflux pump in *Staphylococcus aureus* and MRSA

Adhesin Disruption

Bacteria use adhesins (proteins on the cell surface) to attach themselves to tissue and to each other. For example, *E. coli* bacteria use hairlike proteinaceous appendages called pili or fimbriae to recognize their environment —such as the urothelium (the epithelium lining most structures of the urinary tract). To attach to the urothelium, the bacteria excrete an adhesin from the tips of their fimbriae and begin the process of colonizing and forming a biofilm.

If we can understand some of the adhesin mechanisms used by various types of bacteria, we can use herbs that inhibit these

mechanisms. Going back to the example of the *E. coli* bacteria, we know that herbs like cranberry and bilberry contain A-type proanthocyanidins that block the fimbriae and inhibit their ability to attach or excrete adhesin. This effectively stops the entire colonization and biofilm process before it can even start.

ABOVE: *Ginger*

The herbs listed below all offer some form of adesin inhibition that allows us to create a much more potent antibacterial strategy.

- Barberry—fimbriae inhibition in *Streptococcus pyogenes*
- Bilberry—fimbriae inhibition in *E. coli* and *E. faecalis*
- Cranberry—fimbriae inhibition in *E. coli*
- Ginger—fimbriae inhibition in *E. coli*
- Goatweed—fimbriae inhibition in *E. coli*
- Green tea— fimbriae inhibition in *Porphyromonas gingivalis*
- Hops—fimbriae inhibition in *Streptococcus mutans*
- Japanese knotweed or any source of resveratrol—fimbriae inhibition in *Proteus mirabilis*
- Licorice— imbriae inhibition in enterotoxigenic *E. coli* (ETEC)
- Neem—fimbriae inhibition in *Streptococcus sanguinis*
- Sida—fimbriae inhibition in *Staphylococcus epidermidis*
- Virginia pepperweed (*Lepidium virginicum*, and possibly other species as well)—fimbriae inhibition in *E. coli*

SUPPORT FOR THE TISSUE TERRAIN

Reestablishing a healthy tissue terrain is vital in the case of a bacterial infection, and it one of herbal medicine's biggest strengths when it comes to dealing with sickness inside the body. The tissues we usually target inside the body are the mucosa, and for that purpose we turn to mucosal vulneraries;

see more details. For infections on the surface of the skin (epidermis), we can go back to the basic principles of wound care covered in Chapter 8.

SUPPORT FOR MULTIFUNCTIONAL HOMEOSTASIS

When our immune system is dealing with a bacterial infection, local and whole-body homeostasis — the balance between physiological and biochemical factors that comprises a healthy, normal state — can become imbalanced, weakening the body's response and potentially leading to other problems.

We reinforce local cellular and tissue homeostasis with support for the tissue terrain, as described above. We reinforce homeostasis of the body as a whole—that is, multifunctional homeostasis—with support for organ systems like the lymph, the liver, the kidneys, and the endocrine system.

In this approach, even an acute infection is handled like all other aspects of health and healing: from the ground up. Think of it like a pyramid. At the bottom of the pyramid are nutritional and lifestyle concepts, including stress management. Just above this foundation lies the world of herbal medicine, but herbs should in no way be seen as a substitute for that fundamental bottom layer.

In other words, if someone is sleep deprived, feels chronically fatigued from stress, and eats poorly, giving them an adaptogenic herb formula to help relieve stress and boost energy is not only worthless, it is potentially harmful. Treating

the symptoms without addressing the underlying causes may bring relief at some level, but the ongoing stressors will continue to degrade the person's overall health.

CHAPTER 14
EENT: EYES, EARS, NOSE, AND THROAT

The face is the first thing we see in the mirror in the morning, and we generally are very aware of all the organs that make up this part of our body. The interconnection of the ears, nose, and throat makes them a classic medical specialty, and because the eyes also affect health functions in the sinuses and cerebral circulation, it makes sense to include them here. Knowing how to work with herbs can help us deal with issues like eye infections, earaches, nosebleeds, cold and canker sores, and many other health concerns.

A key component of working with EENT concerns is knowing how to best administer the correct herbs. Fortunately, working with the head area allows us to be creative and use a diverse range of delivery methods, such as compresses, washes, drops, oils, tinctures, and more. It also allows for delivery of herbal constituents not only directly to affected tissue but also into the bloodstream in a way that bypasses the digestive tract and first-pass detoxification in the liver.

THE EYES

The most common acute problems with the eyes are related to inflammation and/or infection of the conjunctiva, the thin mucous membrane that lines the inside of the eyelids and covers the sclera (the white apart of the eye). Irritation of the conjunctiva, or conjunctivitis, is usually attributable to external irritants like smoke, allergies, or viral, bacterial, or even fungal infections.

HERBS FOR THE EYES

Herbs can be extremely effective when working with inflammation, minor trauma, and infection of the conjunctiva and other eye structures. Let's start with some lists of helpful herbs for different situations, and then we'll talk about administering those herbs through an eyewash or compress.

ALLERGIES can cause inflammation and irritation in the eyes. The discomfort can be relieved by one or more of the following herbs:

- Chamomile
- Dong quai
- Eyebright
- Goldenrod
- Licorice
- Plantain

VIRAL CONJUNCTIVITIS (pink eye) is often caused by adenoviruses. Topical relief and tissue support can be found

from one or more of the following herbs:

- Coriander seed
- Dong quai
- Feverfew
- Goldenrod
- Licorice
- Plantain
- Yarrow

BACTERIAL CONJUNCTIVITIS (also known as pink eye) can be treated with one or more of the following herbs:

- Any berberine-containing herb (see here), such as algerita, goldenseal, or Oregon grape root
- Andrographis
- Baikal skullcap
- Echinacea
- Mesquite and/or huisache leaf
- Sida

FUNGAL CONJUNCTIVITIS is rare and a very serious concern. If no higher care is available, then the following herbs would be useful:

- Andrographis
- Baikal skullcap
- Neem
- Walnut

HERPES SIMPLEX VIRUS can infect the eyes, and you can use Herpes Family Virus Formula as an eyewash to treat it, though the lion's mane in that formula can be a little harsh for the eyes. Chaparral, feverfew, and self-heal are especially helpful, but the formula would ideally also include Japanese dogwood berry and ox knee root. Saint John's wort is a good addition; it's

a gentle herb that works well topically in the eye and has both antiviral and neurosupportive properties.

ADMINISTRATION METHODS

There are a few different ways to administer herbs to the conjunctiva and other structures in the eye. The first and often best choice is an eyewash. A compress can also be effective, and it's very soothing.

Eyewashes

You can make an herbal eyewash from an infusion, decoction, tincture, or glycerite. Applying an herbal eyewash is very simple. All you need is an eyewash cup. Although many items would work in a pinch (e.g., swimming goggles, a large bottle cap) eyecups are readily available, and I recommend having at least one in any herbal first-aid kit. They can be easily disinfected after each use with ethyl or isopropyl alcohol and rinsed with hot water.

1. Prepare 1 cup of an infusion or decoction (see here) with your chosen herbs, preferably using filtered or distilled water. Because a decoction is stronger, I recommend it over an infusion for an infection.

   To use a tincture or a glycerite, add 1/8 to 1/4 teaspoon of the tincture or glycerite to 1 cup of hot water. If the tincture is more than 50 percent alcohol, keep the

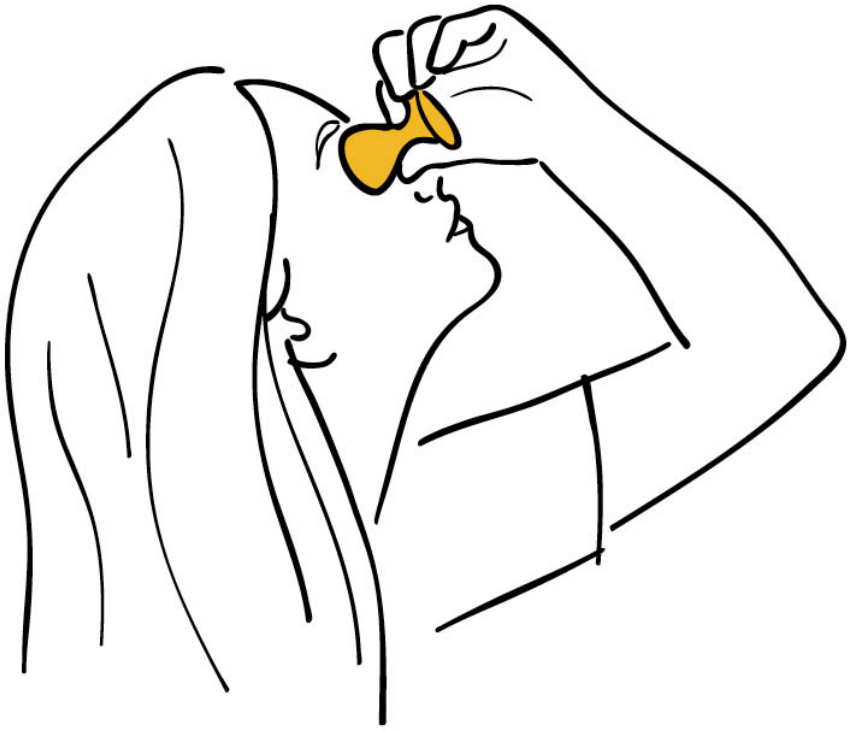
amount to 1/8 teaspoon or less so that the alcohol won't sting when applied to the eye.

2. Allow the mixture to cool to body temperature or below. If you can see any herb or particulate in the water, filter or strain it.

3. Add 1/4 teaspoon of table salt (preferably noniodized) to the mixture and stir until it is completely dissolved. This will create an approximately 0.9 percent saline solution (normal saline).

4. Fill the eyecup with solution. Bend your head to look at the ground, press the eyecup to your eye, then lift your head and look slightly up. Holding the eyecup in place (it should seal well enough to not drip much), move your eyeball around, with the eyelid open. Blinking is fine. The eyewash should be relatively comfortable. Hold the cup in place for 15 to 30 seconds.

If the solution stings badly, there may be too much salt or alcohol in it. If it is too uncomfortable, remix a weaker amount. The eyewash can be reapplied several times per day; depending on the severity of the condition (especially an infection) it should be administered frequently.



ABOVE: *An eyewash can be used to treat allergy symptoms, infections, and minor injuries.*

Compresses

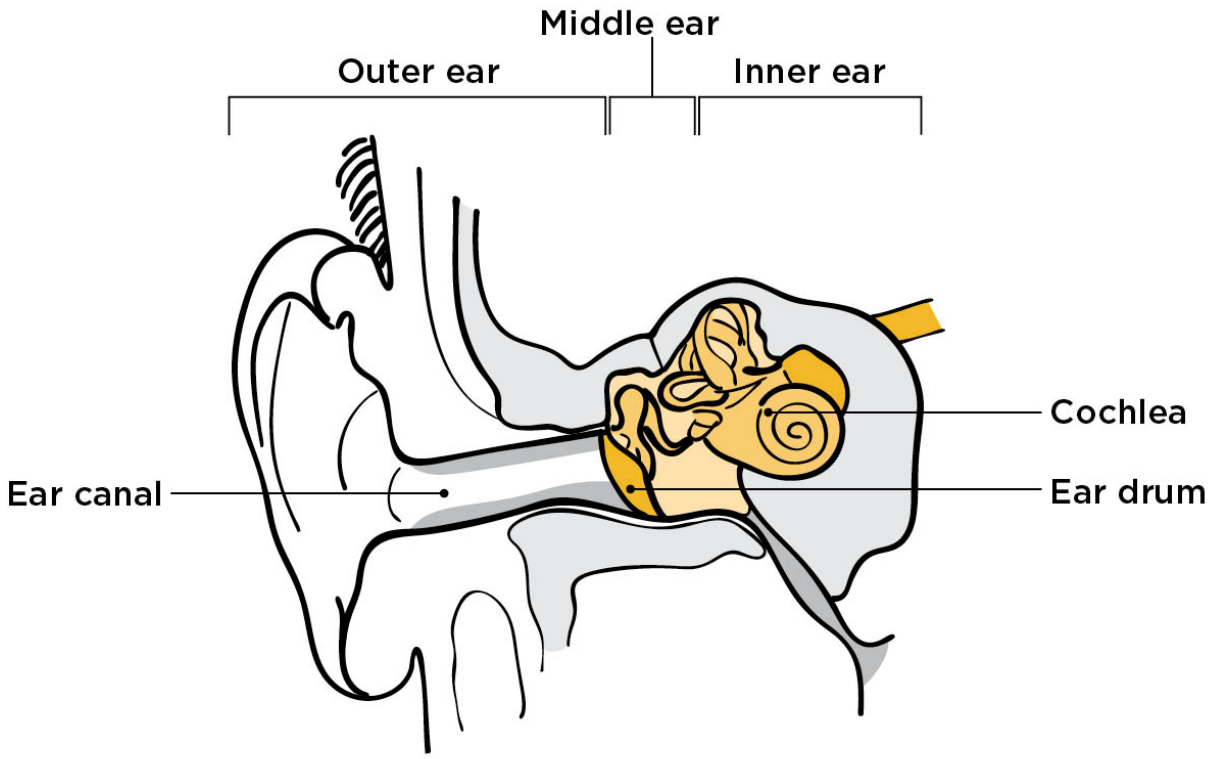
Soak a piece of clean, absorbent cloth (cotton, terry cloth, flannel) in an herbal decoction and then wring it out until it is just saturated enough to drip slowly. Fold the cloth and place it over the eye(s).

A tea bag can be a very simple and effective version of an herbal compress for the eyes. Soak it until it is saturated and then place it over the eye. You can use regular green or black tea bags in this manner to relieve tired or itchy eyes, and, of course, it also works with any herbal tea.

THE EARS

One of the most common problems with the ears is infection. Ear infections are usually typified by their location: outer, middle, or inner. Inner ear infections are more rare and can be more difficult to diagnose at home or in the field. They may result from an untreated middle ear infection that spread, or a viral infection, or more commonly, be related to inflammation elsewhere. For that reason, here I focus on outer and middle ear infections.

In all cases of an ear infection, be aware of red flag indications such as fever, vertigo or loss of balance, severe ear pain or headache, and redness and/or swelling behind the ear (mastoiditis). These are all indications to get to higher care as quickly as possible.



OUTER EAR INFECTIONS

An outer ear infection (otitis externa, sometimes called “swimmer’s ear”) can be handled relatively easily using herbal tinctures (alcohol or vinegar based) applied topically, hot herbal compresses, and herbal washes. However, as with any acute infection, it is helpful to know how frequently the infection occurs, the cause (e.g., swimming or regular immersion in water), and the microbial etiology (bacterial, fungal) in order to devise the most effective treatment.

For an outer ear infection, the ears should be kept as clean as possible, the source of the infection (such as swimming) should be removed until the infection is healed, and any debris

or buildup of dried drainage should be removed. This type of infection is most commonly bacterial in nature, and the following herbs can be useful in treatment if applied topically several times per day. Use any or all of them; if you are combining these herbs in a formula, mix them in a 1:1 ratio.

- Any berberine-containing herb (see here), such as algerita, goldenseal, or Oregon grape root
- Butterbur— primarily for inflammation
- Chaparral
- Devil's claw —primarily for inflammation
- Myrrh
- Oak bark
- Pomegranate rind
- Usnea

MIDDLE EAR INFECTIONS

A middle ear infection (otitis media) can be more difficult to deal with. This condition is more commonly seen with children, and one of the big questions is whether there is any perforation in the tympanic membrane. That would include any ear tubes that may have been put in place, via surgery, to facilitate drainage. If there is an open window between the outside part of the ear canal and the part inside the membrane, it's usually safest not to put anything herbal into the ear.

Knowing the state of the tympanic membrane requires a little bit of medical training, as it is necessary to use an

otoscope and to know what you are looking at as you carefully observe the inside of the ear. This is not a difficult skill to learn, but you need it before you look at a live case of otitis media.

You might also consider investing in an Otovent device. This simple, inexpensive tool (available at drugstores) helps drain fluid out of the middle ear by pushing air into the eustachian tube. Draining the (possibly infected) fluid in the middle ear will allow the ear to heal. Directions for use come in the box or can be found in online videos.

In addition to draining the fluid from the middle ear, I find it more effective to use tinctures or multifractional extracts (which usually include some glycerin) in the ear rather than infused oil. Granted, the classic combination of garlic and mullein flower infused in an oil can be helpful for a middle ear infection, but I have had more consistent success using topical herbal protocols that aren't oil based.

The herbs listed below can be useful for a middle ear infection and will also address the possibility of bacterial biofilm (especially in the case of chronic ear infections). Use any or all of them; if you are combining these herbs in a formula, mix them in a 1:1 ratio.

- Any berberine-containing herb (see here), such as algerita, goldenseal, or Oregon grape root
- Baikal skullcap
- Echinacea
- Mullein flower
- Myrrh
- Uva ursi

ABOVE: *Mullein*

THE NOSE

One very common and minor issue for the nose is a nosebleed. Direct pressure is usually enough to stop the bleeding: Pinch the nose at the septum (where the cartilage starts) and have your patient sit, leaning forward, with their head down. However, if that is not sufficient, three of the best hemostatic herbs—whether taken internally or applied topically—are

Canadian fleabane (*Erigeron canadensis*), wild geranium (*Geranium* spp.) root, and yarrow (*Achillea millefolium*).

Another common issue related to the nose is irritation, inflammation, or infection of a sinus cavity. Similar to conjunctivitis, sinusitis can be related to allergens, an infection by viral, bacterial, or fungal pathogens, or even a combination of the two.

For irritation and inflammation, use mucosal vulneraries (see here). By far my favorite for the upper respiratory tract, including the nose and sinuses, is marshmallow (*Althaea officinalis*), but many other herbs also work well. In fact, it's useful to include demulcent herbs in any formula meant to be administered through the nasal passages to prevent the mucosa from drying out. This is especially true if you are using an alcohol tincture.

For a sinus infection, look to the herbs listed below, depending on the source of the infection. Use any or all of the herbs; if you are combining them in a formula, mix the herbs in a 1:1 ratio.

ALLERGENS can cause inflammation and irritation in the nasal passages. The discomfort can be relieved by one or more of the following herbs:

- Chameleon plant
- Chamomile
- Goldenrod
- Marshmallow

VIRAL INFECTION. A cold or flu can lead to sinus infection. Be aware that the ginger, spilanthes, and prickly ash can be rather

invigorating to the sinus tissue, so you might consider diluting the formula.

- Bee balm
- Boneset
- Elder flower or berry
- Ginger
- Goldenrod
- Marshmallow
- Prickly ash
- Spilanthes

BACTERIAL INFECTION. This list includes both biofilm disruptors (see here) and antifungals. If the infection appears to be chronic (that is, it appears on a regular basis throughout the year or at a certain time every year), be sure to include these herbs in your formula.

- Any berberine-containing herb (see here), such as algerita, goldenseal, or Oregon grape
- Andrographis—a biofilm disruptor; the root in particular is antifungal as well as antibacterial
- Baikal skullcap—biofilm disruptor
- Chaparral—antifungal and antibacterial
- Echinacea
- Sida—antibacterial and mucosal vulnerary
- Usnea—antifungal and antibacterial
- Uva Ursi—biofilm disruptor
- Walnut—antifungal and antibacterial

ADMINISTERING NASAL REMEDIES

One of the primary advantages of working with the nose is the permeability of the thin epithelium of the mucosal membranes. This gives us several ways to get the medicinal effects of an herb directly into the bloodstream; in contrast, when we ingest a remedy, the constituents have to pass through the gut and liver before they enter the bloodstream. Here are some of my favorite methods of administration.

NASYA. A method from Ayurvedic medicine, nasya is simply applying an herb-infused oil to the mucosal surfaces inside the nostrils. Two or three drops in each nostril is enough to deliver medicinal effects. This administration can take place either before or after a nasal rinse, if desired.

NASAL RINSE. Many people are familiar with the use of a neti pot, a nasal irrigation "system" that is really just a spout that you can use to pour a fluid into one nostril and then let it flow through and out the other nostril. Any container with a spout smaller than the nostril will suffice, including a bulb syringe or even just gentle pressure on a normal medical syringe. The rinse itself is most effective when it is isotonic (0.9 percent saline, or ¼ teaspoon salt per cup of rinse), though a nasal rinse done with plain normal saline has great benefits in cleaning and clearing the nasal passages and sinuses.

ABOVE: *Using a neti pot can take some getting used to, but it is an effective way to deliver relief to swollen or irritated nasal passages.*

To use an herbal formula as a nasal rinse, prepare it as an isotonic solution (see here), using 1 to 2 teaspoons of tincture or glycerite per cup of water.

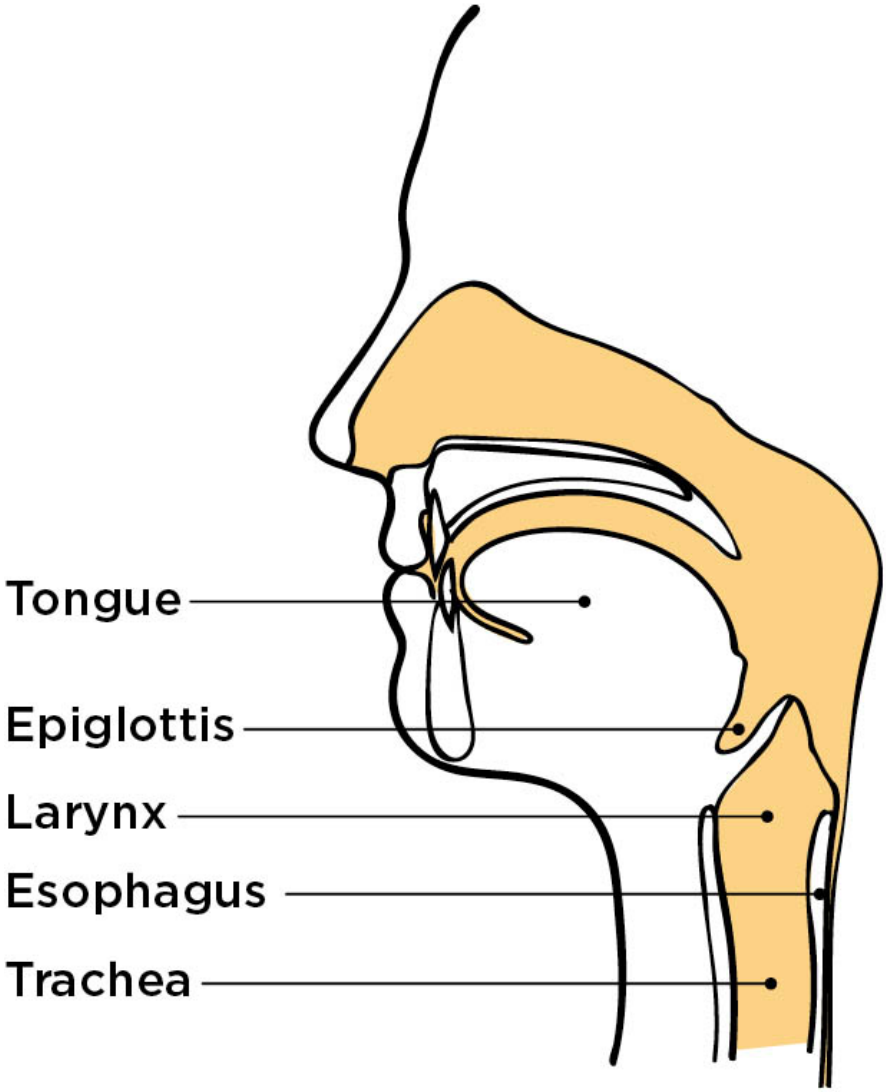
NASAL ATOMIZER. A nasal atomizer is a small syringe attached to a device that fits into the nostril. When you depress the syringe plunger, it disperses a fine mist into the nose. You can use an infusion, decoction, or diluted tincture or glycerite (1 to 2 teaspoons per cup of water) in an atomizer. Ideally, the solution would be isotonic, but it is not absolutely necessary.

Normally, 4 to 8 drops is an adequate dosage to get a good nasal administration of herbs.

THE THROAT

When we talk about the throat, we're including the entire oral cavity: the lips, gums, tongue, teeth, palate, and back of the throat (oropharynx), which are all susceptible to infection and trauma. The mucosa of this area is very responsive to botanical medicine and in particular to many of the heteropolysaccharides found in herbs like echinacea flower and demulcents like marshmallow and licorice. Aside from healing the tissue directly itself, we want to stimulate the submucosal lymph and immune cells to help the body heal. Here are some of the most common issues around the mouth and some of the useful herbs for treatment.

ANATOMY OF THE THROAT



CANKER SORES

Canker sores (a.k.a. aphthous ulcers) are a common complaint that can occur on the lips, gums, and even tongue. One of my favorite and most effective remedies is propolis tincture (see here) mixed with enough powdered licorice root to make a smooth paste.

Apply this paste directly to the canker sore, filling it in. The mixture will sting for a short time because of the alcohol, but it will dry into a flexible bandage that will stay in place for hours. This remedy can turn a canker sore around in hours or a few days, as opposed to a few weeks if you left the sore alone.

COLD SORES

Cold sores (outbreaks of the herpes simplex virus) can be treated with the same formulation as canker sores, but a far more effective formula is an oil or tincture, applied topically, consisting of several or all of the following herbs:

- Chaparral
- Feverfew
- Japanese dogwood berry
- Ox knee root
- Saint John's wort
- Self-heal

Chaparral, feverfew, and Saint John's wort are key for treating cold sores; be sure to include them if you can.

CHAPPED LIPS

Chapped lips (and other mucous membranes) can be soothed with the application of an oil or salve containing some or all of

the following herbs:

- Burdock leaf
- Calendula
- Comfrey
- Marshmallow
- Plantain

TOOTHACHE

A toothache often needs the attention of a health care professional, but temporary relief for mild toothaches (including teething pain for children over 2 years old) can be addressed with an appropriate herbal formula, prepared as an infused oil (like coconut oil), infusion, decoction, tincture, or glycerite, and rubbed into the affected area. Use any or all of the following herbs:

- Chamomile
- Clove
- Prickly ash
- Spilanthes
- Thyme

TOOTH ABSCESS

A tooth abscess is a very serious situation that requires higher dental care, but in the interim, the following herbs can be useful in helping to minimize or even eliminate the pain and infection:

- Any berberine-containing herb (see here), such as
- Prickly pear

algerita, goldenseal, or Oregon grape
- Echinacea aerial parts
- Plantain
- Spilanthes
- Thyme
- Yarrow

Note that even if symptoms go away completely, an abscess still should be checked by a medical professional.

Prickly pear can be used by itself for a tooth abscess, and actually works better this way. After you scrape off the needles (see here), fillet the pad and trim it to fit in the mouth, with its inner goop right up against the affected area of the gum and tooth. Alternate this mini-poultice with a poultice or plaster of the herbs listed.

In a pinch, you can even use a green or black tea bag as a poultice to help relieve an abscess. Just soak it in a cup of hot water and then place it against the abscess.

SORE THROAT

A sore throat can result from any number of acute or chronic issues, from cold air and allergens to viral, bacterial, or even fungal infections. In general, the biggest issue with throat pain is getting the herbs to the tissue in a way that will affect the tissue for longer than it takes just to swallow. Gargling with a decoction, infusion, or diluted tincture or glycerite helps, as does using herbs that are potent mucosal vulneraries and have very low toxicity. Ingesting fairly large amounts of herbal tea is a good way to constantly bathe the back of the throat.

One of the best herbs for a sore throat is marshmallow. By far the best way to prepare marshmallow is to soak the root and/or leaf in room-temperature water for 20 to 60 minutes, while shaking occasionally, and then strain. An adult can take 1 to 2 tablespoons every 15 to 60 minutes throughout the day. Half that amount is a good dosage for children.

Remedies for the throat can, of course, be taken orally and swallowed, but they will be more effective if they are gargled or sprayed onto the affected mucosa of the mouth and/or throat first.

Formulate some or all of the following herbs in a 1:1 ratio (that is, in roughly equal parts). The adult dosage of a tincture of this formula is ½ to 1 teaspoon three to five times per day.

For Viral Infections

- Bee balm
- Echinacea aerial parts
- Prickly ash
- Spilanthes

For Bacterial Infections

- Any berberine-containing herb (see here), such as algerita, goldenseal, or Oregon grape root
- Baikal skullcap
- Echinacea aerial parts
- Prickly ash
- Thyme
- Usnea
- Uva ursi

Propolis is also helpful for bacterial throat infections. Spray it on the affected mucosa after you have applied the other herbs. Propolis will form a “liquid bandage” at the site, holding the herbal constituents in contact with the infected area.

CHAPTER 15

ACUTE CARE

Acute care for internal conditions of the urinary and gastrointestinal tracts is one of the places where herbs can really shine. It is necessary to have diagnostic skills, however, and there are red flags that must be recognized and understood. In this chapter, we will explore the use of herbs to help restore balance, counter infection and inflammation, and help the gut and urinary tract recover from acute infections.

URINARY TRACT INFECTIONS

A urinary tract infection (UTI) is fairly easy to diagnose from symptoms alone. They commonly include the following:

- A frequent urge to urinate
- Bloody or cloudy urine

- A burning or itching sensation while urinating

These symptoms may indicate an infection in the lower urinary tract (the urethra and bladder). However, it is critical to look for signs that the infection is in the upper urinary tract (the ureter and kidneys). An upper UTI will present with the same symptoms as a lower UTI along with the following:

- Lower back pain or tenderness around the area where the lowest ribs attach to the spine
- Flank pain (between the bottom of the ribs and the top of the pelvis, along the side of the body)
- Tenderness in the suprapubic region
- Severe pain for the first few steps of walking immediately after getting up from a horizontal position
- Fever
- Nausea
- Malaise

For an herbalist, an upper UTI is a red-flag event. It is far more serious than a lower UTI, and even potentially life-threatening, and should be referred to orthodox medical care. It is usually treated with intravenous antibiotics. While it's possible to treat an upper UTI with herbs, rest, and nutrition, without the help of antibiotics, it's not something you should ever want to do unless you have no other choice.

A lower UTI, on the other hand, is an acute illness that you can usually treat very quickly and satisfactorily using plant medicine. It can be no more difficult, in my opinion, than working with other acute infections, depending on how early you catch it.

PATHOPHYSIOLOGY

Bacteria are by far the most common cause of UTIs, finding their way from the outside world into the opening in the urethra. Bacterial infections in the urinary tract are most commonly either hygiene-related (due to the proximity of fecal bacteria) or sexually transmitted.

Hygiene-Related UTIs

Hygiene-related bacterial infections are far more common in women than men, probably as a result of the shorter length of the urethra. These types of infections are usually caused by *Escherichia coli* bacteria that normally live in the colon. They can be a result of sexual activity, though they are not "sexually transmitted" in the usual sense; rather, the mucosal wear and tear that can occur during sex can create an environment that is predisposed to colonization by bacteria. Statistically, as many as 80 percent of women in their premenopausal years who contract a UTI have had sex within the past 24 hours.

When bacteria find their way to the urinary tract, they encounter the urothelium, the epithelial mucosa that lines the urethra and other organs of the urinary system. As you might

assume, healthy mucosae discourage bacterial colonization; damaged or poorly functioning mucosae allow it. Our goal as herbalists, then, is to maintain and sustain the health of the urothelium to both prevent and cure a UTI. (This gives us ample reason to emphasize good hydration for anyone with a UTI; increases in the rate of elimination, fluid movement over the damaged tissue, and moisture in the tissue are all essential to reestablishing a healthy state in the urothelium.)

After *E. coli*, the next most common bacteria to cause UTIs in the United States—especially in women—is *Klebsiella pneumoniae*. These two species of bacteria are generally among the commensal or "healthy" bacteria that live in the colon. Upon migrating to the urethra, these bacteria form growing colonies that reach a certain size and then break off, continuing to colonize their way up the urethra toward the bladder.

As we discussed in Chapter 13, bacteria form colonies by excreting adhesins (proteins) from the tips of their fimbriae (hairlike appendages) in order to attach themselves to tissue and to each other. But certain constituents found in plants inhibit the bacteria's ability to use their fimbriae in this manner. One of them is a proanthocyanidin (PAC)—specifically, a PAC with what's called an A-type molecular linkage. A-type PACs bind to the fimbriae of the bacteria and prevent them from being able to attach firmly to one another or to the urothelium. This allows us to eliminate the bacteria through the force and dilution effects of urination.

Many PACs can be found in food and medicinal plants, but not very many of them have this A-type of linkage in their

molecular construct. The herbs that do contain A-type PACs include cranberry (*Vaccinium macrocarpon*) and bilberry (*Vaccinium myrtillus*). PACs are best extracted by infusion rather than tincturing.

D-mannose, a type of simple sugar, has a similar effect. This is a sugar that we do not use but excrete. *E. coli* and *K. pneumoniae* bind to D-mannose, and if it is in high enough concentrations in the urine and along the urothelium, they become unable to create a firm hold on their surroundings. D-mannose is present in many different fruits and plants (including cranberry), but it is easiest and best to buy it in capsule form to get the high dosages necessary (approximately 500 mg, 4 to 6 times per day for 5 to 7 days).

Sexually Transmitted UTIs

Gonococcal and *Chlamydia trachomatis* infections of the urethra are sexually transmitted and can initially be asymptomatic. Though they begin in the urethra, they can extend into women's reproductive organs and cause inflammation in the cervix and fallopian tubes (i.e., pelvic inflammatory disease, or PID). For men, these infections can spread to the epididymis and prostate. Bear in mind that any bacterial infection in the urinary tract can do the same, but the fact that an STD can be asymptomatic can mean that it colonizes further throughout the genitourinary tract before anyone recognizes that treatment is needed.

Men are more likely to show symptoms, the most common being purulent discharge from the urethra. For women,

symptoms may not appear until there is inflammation of the cervix.

GET A PATIENT HISTORY

When we're faced with UTI symptoms, taking a good patient history is one of the first important steps in figuring out what may be going on. The symptoms, signs, and epidemiology of the infection will help us understand its severity, whether we can and should use herbal therapy, and what specifically the herbal and nutritional protocols should be. Age, sexual activity, previous illnesses, birth control (diaphragms and IUDs can possibly contribute), pregnancy, medications, allergies, fluid intake, and nutrition are all important factors to consider.

TREATMENT OF A UTI

First and foremost, plenty of rest, nutrient-rich food, and lots of clean, filtered water are imperative. Frequent urination is important, so base the liquid intake around a good output, especially when addressing a recurring or chronic UTI. Sex can exacerbate a UTI, so abstinence from sexual intercourse while healing is something to consider.

On the nutrition side, foods that are rich in probiotics (fermented foods) and prebiotics (fiber) are extremely helpful

support for UTI (and yeast infection) recovery and prevention. Leaning toward a more vegetarian diet, with lots of organic, leafy green vegetables, is advisable while healing.

In terms of herbs for treating a UTI, there are several points that I like to consider:

BIOFILMS. Biofilms are probably present, especially in a UTI that has been recurring — which means it is probably chronic and the bacteria are hiding out in biofilms somewhere in the urinary tract. I always assume that biofilm is part of a UTI.

MULTIPLE BACTERIA. With or without biofilms in the urinary tract, we can likely count on multiple species of bacteria being present. There may be one primary species comprising most of the bacterial population, but a shotgun antibacterial approach is probably most effective.

LOCATION. It is very important to know how to distinguish between upper and lower UTIs and respond accordingly.

EXCRETION. Work with herbs that excrete through the urinary pathway. Remember, if an herb's constituents don't come in contact with the urinary tract, they won't be effective in fighting infection there. Take goldenseal (*Hydrastis canadensis*), for example, which contains berberine, a powerful antibacterial compound. However, very little (less than 0.5 percent) of the berberine actually makes it into the urine, which greatly limits the efficacy of this herb in regard to a UTI. You may even be able to smell an herb in the urine, which is a clue that at least the aromatic constituents are traveling that pathway.

MUCOSAL SUPPORT. As with any infection of the mucosa anywhere in the body, restoring the mucosal integrity is paramount. With a proper tissue state restored, the body will heal itself. However, unlike the upper respiratory tract, where we can put mucosal vulneraries into direct contact with the mucosa, we can't count on herbs to restore the urothelium from direct contact as they are excreted through the urethra.

The heteropolysaccharides that make these herbs demulcent are broken down in the gut before they reach the urethra. Research indicates that they may still exert some degree of a demulcent effect on the urothelium, and for that reason I include mucosal vulneraries in my UTI protocols, but I rely more on lots of water, good nutrition, aquaretic herbs (to promote urination), and heavy use of antibacterial herbs.

A great many herbs are effective against UTIs and they can be combined in any number of ways. See the Urinary Tract Infection Formula for one combination that I use.

Herbs for Urinary Tract Infections

- Baikal skullcap. A biofilm disruptor, among other things; consider it particularly for recurring UTIs.
- Bilberry leaf and berry. The leaves contain hydroquinone, a strong antibacterial that is effective against *E. coli* and other adhesin-type bacteria as well as gonococcal UTIs. The berry contains A-type PACs, which prevent bacteria from colonizing.
- Cinnamon. Has strong antibacterial activity in the urinary tract against *Pseudomonas aeruginosa*, a very prevalent

bacteria that is often present in UTIs.

- Cleavers. A decent aquaretic, a lymph mover, and a gentle supportive herb.
- Cordyceps. An excellent kidney support herb, it increases the glomerular filtration rate, a measure of kidney health.
- Corn silk. A soothing mucosal restorative for the urinary tract.
- Cranberry. Contains very high levels of A-type PACs. It is best taken as an infusion, but standardized tablets are more convenient for long-term use.
- Echinacea. One of the primary herbs in any UTI formula for any pathogen.
- Goldenrod. An aquaretic; also increases the kidney filtration rate and supports the kidneys and urinary tract.
- Gravel root. A good herb for kidney stones and infection; appears to sooth inflammation of the kidneys and urothelium while being an excellent diuretic. Be aware of toxicity issues due to pyrrolizidine alkaloids (see here).
- Holy basil. Highly antibacterial, specifically against *K. pneumoniae* and *E. faecalis*.
- Horsetail. Appears to tone and strengthen the urothelium.
- Kava. An excellent herb for relieving urinary tract pain and inflammation and fighting infection.
- Marshmallow. A mucosal vulnerary that helps the urothelium heal.

- Mullein root. Can help relax the detrusor muscle and relieve urinary irritation; especially useful for cystitis. Also relieves inflammation in the bladder and can help with urinary incontinence.
- Neem leaf. Most commonly used as an antifungal (to include yeast infection), but has antibacterial activity against *E. faecalis*.
- Nettle seed and root. Both work as anti-inflammatories and mild diuretics. The seed is useful for both the upper and lower urinary tract, while the root is extremely useful for prostate tissue in males, targeting both chronic UTIs as well as benign prostatic hypertrophy.
- Ocotillo. A wonderful lymph mover for the lower body. I use it, sometimes with stillingia, either in a separate lymph/immune protocol or sometimes in the UTI formula directly to help stimulate lymph and immune activity around the pelvis and lower extremities.
- Plantain leaf. Has mucosal vulnerary properties to help soothe the urinary tract, as well as baicalin.
- Pomegranate rind. A great anti-infective, particularly against *E. coli*. It goes very well with ginger for this specific purpose.
- Prickly pear flower. A fantastic mucosal vulnerary for mucosa anywhere in the body.
- Pumpkin seed. The cold-pressed oil or tincture of the seed can be used for its mucosal vulnerary effects on the lower urinary tract, the upper urinary tract, and prostate tissue for males.

- Sida. The plants in this mallow family genus, including wireweed (*Sida acuta*), are antibacterial and useful for UTIs.
- Usnea. Considered highly antibacterial specifically for *Staphylococcus*, *Streptococcus*, and *Mycobacterium* genera, and I find it works well for UTIs, even though not many herbalists use it for this purpose. I have seen lower UTIs turn around within hours of adding usnea when the usual PAC-containing herbs did not seem to be helping much. This may be due to the biofilm disrupting actions of usnic acid.
- Uva ursi. A very well-known herb for UTIs, particularly ones caused by *E. coli* or other adhesin-type bacteria. Contains arbutin, which is converted to hydroquinone in the body, and has been shown to inhibit biofilm formation; an excellent herb for chronic UTIs.
- Watermelon seed. An old Southern remedy to soothe and heal kidney irritation and inflammation; use like pumpkin seed.
- Yarrow. A decent diuretic and eliminative herb that can help significantly with inflammation-triggered irritation in the bladder and urethra.

GASTROINTESTINAL DISTRESS

Food poisoning, giardiasis, salmonella, stomach flu, and many other types of gut infections can readily be attended to using herbs. Activated charcoal is often more appropriate, however,

and should be one of your first choices when dealing with an acute onset of what appears to be some type of gastrointestinal infection.

Once you've administered the charcoal, a good choice for follow-up treatment is any herb containing berberine, such as algerita, goldenseal, or Oregon grape root. Berberine has astringent, antibacterial, and antiprotozoal properties and will help quell diarrhea while also reducing inflammation and irritation to the gut mucosa and providing antibacterial and even antiprotozoal effectiveness. See more information.

DIARRHEA, NAUSEA, AND VOMITING

Diarrhea, nausea, and vomiting can be mild to severe and can create a host of other related issues, from transmission of disease to dehydration and worse. It's important to identify and address the cause of the issue, of course. The following herbs can help you at least deal with the initial issue of losing body fluids and feeling physically very sick. Use any or all of the herbs, formulating them in a 1:1 ratio (that is, in roughly equal parts), except as noted. They can be administered as infusion, decoction, tincture, or glycerite. The tincture dosage is ½ to 1 teaspoon every 2 to 4 hours as needed. (See the Nausea Formula as an example.)

- Algerita—one of the best anti-nauseals
- Blackberry root—the root of most species of the *Rubus* genus is effective, but this is my favorite; a very astringent plant that helps slow down or stop diarrhea

- Blue flag—anti-nauseal bitter (use only in a formula and as ½ part compared to any other herb in this list)
- Canadian fleabane—a highly astringent hemostatic (even for internal bleeding) and an antidiarrheal
- Ginger—often helpful with certain types of nausea
- Peppermint—carminative with soothing action on the stomach
- Spearmint—carminative with soothing action on the stomach
- Wild geranium—a strong astringent that is usually very good at slowing or even stopping diarrhea
- Wormwood—a very useful bitter for nausea and vomiting
- Yarrow—an astringent that is useful for diarrhea

CONSTIPATION

Constipation is often related to dehydration and is not uncommon in the field. Like diarrhea, it is important to look for possible causes rather than simply treating the symptoms. Proper hydration is key and the first step to take in treatment. Many herbs can also be helpful in resolving the issue.

The goal is not necessarily to cause any type of purging—although there are many herbs that will do that very well, such as the leaves and pods of *Senna* and *Cassia* species, which contain anthraquinone— but rather to gently stimulate normal bowel peristalsis and movement. Some of the most useful herbs are:

- Most bitters (see here)
- Blessed thistle
- Culver's root
- Frogfruit—a common groundcover herb in the southern United States and one of my favorite herbs to stimulate peristalsis; a potent liver decongestant
- Gentian
- Marshmallow—primarily to help hydrate the gut mucosa

APPENDICITIS

An infection of the appendix is a potentially life-threatening medical situation, so it's important to know how to identify it. The signs and symptoms are fortunately fairly distinct and not difficult to recognize:

Abdominal pain: It usually starts in the upper central area and moves toward the umbilicus region and then to the lower right quadrant.

Rebound tenderness: Have your patient lie flat on their back (they can bend their knees to help relax the abdominal muscles). Press down gently but firmly in the lower right quadrant with the flat of three or four fingers. Release the pressure quickly. A feeling of pain upon the sudden release of pressure is called rebound tenderness.

Pain caused by sudden pressure on the bottom of the right foot: With your patient lying on their back and their right leg raised about a foot in the air, tap the bottom of the right heel firmly with your palm. Abdominal pain upon sudden heel pressure is a positive sign for appendicitis. You can also perform this test by having your patient stand on their toes and then drop to their heels.

Other common symptoms: Nausea and vomiting, fever, and lack of appetite often accompany appendicitis.

Appendicitis can be caused by a number of issues, including fecaliths (hardened feces), enlarged and engorged lymph tissue in the appendix, inflammatory bowel disease, and trauma. Whatever the cause, infection, dehydration, and poor gut mucosal health can play a contributing role in the disease process.

I have not dealt with appendicitis using herbs. It is a condition that warrants immediate evacuation to higher medical care, so my input is based on conjecture of what I would do if I had no other choice but to work with herbal medicine. It should be noted that appendicitis (prior to rupture) may be just as successfully treated by antibiotics as by surgery. This lends some hope to the idea that in an austere environment with no antibiotics, it might be possible to turn a case of appendicitis around if it is caught early enough.

The priorities for me would be to try to reduce inflammation, treat the infection, and stimulate lymph movement while also trying to restore gut mucosal health (see

the list of mucosal vulneraries). Many herbs are extremely effective for these goals and I have used them for many types of gastrointestinal issues—just not for appendicitis.

Listed here are some herbs from which you could devise an integrated protocol for treatment. Bear in mind that slow hydration is very important here too. Taking some of these herbs in slow and steady sips as a decoction (or a tincture diluted in water) could help not only hydrate the patient but also allow ingestion without nausea or vomiting.

Anti-Infective Herbs

- Any berberine-containing herbs (see here), such as algerita, goldenseal root, or Oregon grape root
- Andrographis
- Baikal skullcap
- Black walnut
- Elecampane
- Garlic
- Myrrh
- Uva ursi

Herbs to Reduce Gut Inflammation

- Any berberine-containing herb (see here), such as algerita, goldenseal root, or Oregon grape root
- Baikal skullcap

- Devil's claw
- Marshmallow
- Plantain
- Turmeric
- Wild yam

Herbs to Stimulate Lymph Movement

- Blue flag or poke root (use only in a formula, not on its own, and as ½ part compared to any other herb in this list)
- Echinacea
- Prickly ash
- Red root
- Stillingia

INTERNAL PARASITES

Parasites are creatures that feed off a host, and they are very common in our natural world. Humans generally host three types of parasites: single-celled protozoa, worms (helminths), and ectoparasites that live and feed on our skin. While many types of parasitic infections can occur outside the gut, here we will focus primarily on intestinal parasites, in particular those that can be passed through food, water, and poor hygiene in the field. We're focusing here on parasites that can cause an

acute set of symptoms, such as vomiting and diarrhea, that could be life-threatening without proper care.

PROTOZOAL INFECTIONS

Giardiasis, cryptosporidiosis, amebiasis, and even cyclosporiasis are all intestinal protozoan infections found in North America that can be spread through food, water, and even direct contact. They are generally spread via the fecal-oral route, including the feces of both humans and animals. Of course, hygiene is the best preventive measure. However, there are herbal protocols and approaches to dealing with both the symptoms as well as the pathogens themselves in the case of infestation.

Common signs and symptoms of these four types of infections include:

- Diarrhea
- Nausea
- Cramping
- Bloating
- Vomiting
- Dehydration (from fluid loss)
- Fever
- Greasy stools (with giardiasis)

Although any of these protozoal infections can be severe and even potentially life-threatening, particularly in remote conditions, amebiasis is potentially the most serious. It is highly virulent and even with minimal exposure can cause very severe dysentery and inflammation of the gut, along with possible chronic issues in other locations, such as liver abscesses. Bear in mind that the opposite end of the spectrum can also be true; that is, these infections can be asymptomatic. I have seen people with giardiasis, for instance, who barely had any symptoms at all, while I know of another person who was hospitalized because of an infection.

Obviously, any time we are losing a lot of fluids due to vomiting and/or diarrhea, hydration is critical. However, aside from hydration, hygiene, and rest, what herbal approaches can we take to help with these situations in the absence of higher care or when symptoms and signs may not warrant higher care?

First consider the use of activated charcoal (or even bentonite, if that's what you have available) to help with diarrhea as well as to possibly reduce the die-off toxins (toxins released by bacteria as they die) and pathogens themselves. See more information about using charcoal. To ensure maximum effectiveness for both the charcoal and the herbs, offset the use of charcoal and the intake of herbs by a few hours.

The herbs discussed here are all useful for some or all of these types of protozoal infections and can be formulated (with each other and other herbs outside this list) according to their functionality.

- Any berberine-containing herb (see here), such as algerita, goldenseal root, or Oregon grape root—astringent (antidiarrheal), direct antiprotozoal, and gut anti-inflammatory
- Chaparral leaf—direct antiprotozoal (but toxic, and should be used in drop dosages; see here)
- Chaparro amargosa bark—direct antiprotozoal and gut anti-inflammatory
- Elecampane root—stimulates gut health; antiprotozoal
- Estafiate leaf—direct antiprotozoal (especially for giardia); supports digestive health
- Garlic—direct antiprotozoal
- Ginger—gut anti-inflammatory and direct antiprotozoal; supports digestive health
- Long pepper and/or black pepper seed—anti-inflammatory and direct antiprotozoal
- Neem leaf—direct antiprotozoal and liver support
- Papaya seed—direct antiprotozoal (especially for amebiasis)
- Pomegranate rind—direct antiprotozoal
- Silk tassel leaf or bark—antispasmodic for cramping and diarrhea; may be a direct antiprotozoal (in particular for giardia)
- Wild geranium root—astringent (antidiarrheal), gut anti-inflammatory, direct antiprotozoal

HELMINTHIC INFECTIONS

As is the case with protozoal infections, the transmission of multicellular parasites such as roundworms, flatworms, hookworms, tapeworms, and pinworms usually occurs via the fecal-oral route and can be greatly reduced through good hygiene measures.

Symptoms of a helminthic infection can range from nothing (asymptomatic) to diarrhea, abdominal discomfort, malnutrition, lethargy, and more severe long-term symptoms such as rectal prolapse, stunted growth, and mental retardation. In the case of pinworms, symptoms include itching and rash in the anal area, as well as visible pinworm eggs in the anal area and pinworms in stool.

Helminthic infections can usually and easily be dealt with using pharmaceutical medicine. In the case of severe community-level parasitic infections, the easiest route to restoring health usually involves pharmaceutical protocols combined with water purification, implementation of good sanitation practices and facilities, and hygiene awareness regarding food growing, preparation, and handling.

For those who wish to use natural methods, many herbs have strong antiparasitic actions. Combining herbs with pharmaceuticals can produce very effective treatment but requires some integrative cooperation and research, especially depending on the parasite.

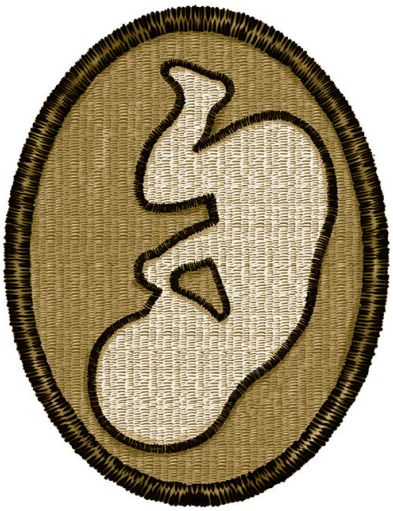
Without lab equipment in the field, it may be difficult to determine the specific species of helminth, but fortunately most of the antiparasitic herbs have effects overlapping across

most species of helminths, particularly those most common to North America. For this reason, a shotgun formula approach is an effective field method.

The herbs listed below are some of my favorite strongly antiparasitic herbs, specific to helminthic parasites. Notice that many of them were just mentioned here as effective antiprotozoal herbs.

- Any berberine-containing herb (see here), such as algerita, goldenseal root, or Oregon grape root
- Black pepper or long pepper seed
- Black walnut green hull and leaf
- Chaste tree leaf (*Vitex negundo* and possibly *Vitex agnus-castus*)
- Elecampane root
- Garlic
- Ginger
- Horseradish root
- Neem leaf
- Papaya seed
- Prickly ash
- Wormwood leaf

CHAPTER 16
EMERGENCY CHILDBIRTH



Meconium is the newborn's first feces. When the "meconium hits the fan" (MHTF) — that's how midwives might describe an emergency childbirth, meaning birth in an unexpected location, at an unexpected time, and/or with little to no preparation or outside help, and possibly with complications. Knowing what to do in an MHTF situation is an important skill for any medic, especially because women are more likely to go into labor prematurely and complications are more common in times of disaster and crisis.

Contributed by Katia LeMone (MPH, CPM) has been a homebirth midwife and herbalist since 1990, working in Mexican, Native American, East African, and Mennonite communities. She runs a birthing center and herbal clinic in Mexico, where she trains midwives and doulas, and teaches

herbal classes and the Austere and Disaster Birth Worker Course with Herbal Medics Academy, run by Sam Coffman.

Let's explore how to handle a birth under the assumption that no midwife or doctor will show up, there is no hospital or clinic available, and no EMT is going to drive up in an ambulance and take over. We will assume that you have not had training in birth or medicine and are practicing in an austere environment, with little or no equipment or supplies.

If you have picked up this book, you likely have some familiarity with herbs. The brief materia medica provided at the end of this chapter will be helpful (and some herbs are described in more detail starting here) but remember that you must use herbs sparingly during pregnancy and labor. Nevertheless, herbs can be lifesaving in a MHTF situation, such as managing a hemorrhage.

DISCLAIMER

This information is not meant to take the place of midwifery, obstetric, or other professional medical care. This is not a training manual for those who are planning an unassisted homebirth and is not intended to serve as the only training for a person who will be attending births. Instead, this information is meant to empower you to assist in an unexpected birth if no higher care is available.

WATCH, WAIT, WITNESS

Attending a normal birth is a blessing and a privilege. Simply giving support and encouragement during this time can make all the difference. Certain herbal remedies, administered during key times in the labor, birth, or postpartum period, can be very supportive, and even improve the outcome. Try to relieve your anxiety about assisting a laboring woman by knowing that the process is normal. Often, birth outcomes are better in settings where the options for intervention are limited. In many cases, unnecessary interventions, such as repeated vaginal exams, cause complications.

Midwives' role is to be Guardians of the Normal. We do our best to practice what is called WWW midwifery, which stands for watch, wait, and witness.

- **Watch** for ways to support and for signs that intervention is needed.
- **Wait** before intervening or "doing" anything. Be willing to sit on your hands.
- **Witness** for the mother and family during this amazing experience. Be okay with your job of bearing witness to the birth, even if it means doing very little to intervene.

At an MHTF birth, your goals can be the same. Embrace being a guardian and practicing WWW midwifery.

BIRTH IS NORMAL

Although often misrepresented in mainstream media, birth is neither a trauma drama nor a situation comedy. Birth is normal. The material in this chapter is about supporting normal birth with herbal medicine and basic first-aid skills. Preparedness equals empowerment. It is imperative that you trust the process. Normal birth is *not* an emergency. Most births, even in unexpected settings without trained birth attendants, tend to progress without incident, and most babies are born without complication. Most women will know when the baby is coming. Your job is to trust the mother's judgment, to honor her wisdom, to support her, and to remind her that this is a normal physiological process. During birth, knowing what *not* to do is potentially more important than knowing what to do. An overexcited birth attendant who thinks they must intervene in some way may actually cause a problem instead. For example, there is no need to immediately cut the cord (see here). Remember, women have been giving birth outside of hospitals for millennia.

A FEW TERMS TO LEARN

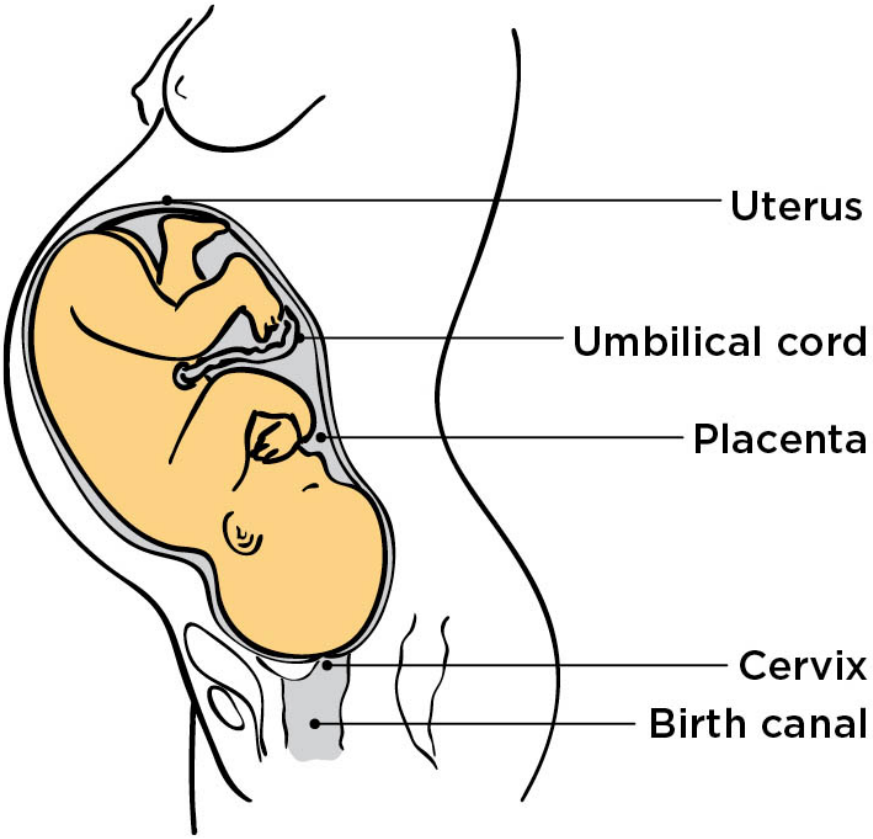
This presentation is written for the layperson, not medical professionals. However, it is important to have some general

knowledge and learn some terms regarding pregnancy and labor so that you can understand and explain the process of birth.

The baby grows inside the woman's uterus, in a sac filled with amniotic fluid. The baby's umbilical cord connects the baby to the placenta. The placenta, which is attached to the uterus, transfers oxygen and nutrients from the mother's system to the baby. The place where the placenta has detached from the uterus is the wound that bleeds after the birth. After the birth, the uterus continues to contract to stop this bleeding.

The opening of the uterus is a circular muscle called the cervix. During pregnancy, the opening of the cervix is filled with thick mucus. Uterine contractions and the pressure of the baby on the cervix causes it to open, or dilate. This makes it possible for the mother to push her baby out.

Contractions, or "labor pains," increase in intensity and duration over the course of labor and help the baby move lower into the birth canal. The baby is often born over several contractions as the perineum stretches and opens. The perineum is the tissue between the vagina and the anus. The vagina or the perineum may tear during birth but will usually heal on its own within the first few days afterward. Overall postpartum healing extends for 6 to 8 weeks following the birth of the baby.



WHAT TO DO FIRST

When you find yourself at a birth, the first thing to do is to take a deep breath. Remember that birth is normal and try not to intervene with the process. Your attitude is contagious, so be calm, confident, and ready to assist.

Next, before you touch the laboring woman, the equipment, or the baby, wash your hands vigorously with soap and water. Wash your hands often during the labor and the birth, if possible. Even if no soap is available, friction with warm or hot water can cleanse a great deal. You can also disinfect your

hands by washing with alcohol or an alcohol-based herbal tincture. Higher rates of birth-related death (prior to the widespread use of antibiotics) have been linked to infections caused by lack of proper handwashing.

Get permission to assist by addressing the mother and support persons. If you have not done so already, identify yourself and inform her that you have some knowledge of the birth process. Ask if you may be of assistance before intervening. Enlist the assistance of others, especially anyone the woman trusts (like a significant other, a friend, or a family member). Even if they have no training, an extra set of hands is always helpful. Throughout the experience, remember to breathe calmly and help the mother to breathe as well.

PREPARE THE NEST

It is vital to provide a quiet, safe, and clean place for the birth to take place. We call this "preparing the nest." The importance of security and privacy cannot be overemphasized. The mother will be going through her own psychological process as her body prepares for the birth. If appropriate, let her do some nesting herself. This will help her feel more in control.

Create a clean surface for the baby to be birthed on. Gather clean clothes, towels, sheets, blankets, or other material. If nothing else is available, use newspaper, which is amazingly close to sterile if it is new and unopened. If you have time, wash more towels, clothes, or blankets. You will need them to dry off the baby and keep them warm.

PROVIDE NUTRITION

The mother will need access to good nutrition throughout labor and in the immediate postpartum period. Do not limit her intake, and instead encourage eating and drinking as she is able. There is no evidence to support limiting nutrient intake during labor, even in cases that end in emergency surgery. Early in labor is a good time to have a hearty meal, because in many cases women will lose appetite or vomit as labor progresses. The nutrients and protein she consumes now will serve her in the hours of work ahead.

Ensure that the woman is well hydrated. Consuming water or simple oral rehydration solution will keep her system balanced. A good formula for oral rehydration is half a small spoonful of salt and six small level spoonfuls of sugar dissolved in a quart of clean water. Encourage the laboring woman to drink a cup of fluid every 30 minutes.

A full bladder can interfere with the effectiveness of the contractions and cause contractions to be more painful, so she needs to empty her bladder on a regular basis. Encourage urination every 30 minutes. This will also keep her moving and changing positions.

BASIC EMERGENCY BIRTH KIT

- Disposable underpads (a.k.a. chux pads, used for incontinence)—10 to 20
- Sterile gauze pads, a box of 10 to 12 (4 × 4-inch)

- Plastic cord clamps, cord ties, or clean shoelaces
- Sterilized scissors or pre-sterilized scalpels
- Ear syringe with bulb (3 oz)—used if necessary to clear the newborn's mouth and nose
- Sanitary napkins—at least a dozen
- Isopropyl alcohol—for cleaning plastic cord clamps, instruments, and hands when soap and water are not available
- Hydrogen peroxide—for cleaning up blood
- Several towels, newborn blankets, and a newborn hat

STAY CALM

Develop trust with the woman. Early in labor is a good time to tell stories (funny ones are often the best) and to reassure her about trusting the process and her own body. Talking about how women have been birthing babies like this for millennia may help. Later in labor she will want less distraction. However, you can continue to provide support and build trust by being a calm presence, minimizing noise, and using occasional words of comfort and, if appropriate, reassuring touch.

If the mother needs to calm down, consider giving her some herbal nervines. Do not worry; she will not sleep through the birth of her baby. Sleeping between contractions can be normal and even beneficial.

SUPPORT DURING LABOR

During an MHTF scenario, the laboring woman will be under stress. The physical stress of labor is obvious, but she may be subconsciously hesitant to bring a baby into a situation that doesn't feel safe. If a woman does not feel safe, labor progress can slow or even halt, and pushing may be ineffective. In such cases, the mother may need reassurance. You will have to help her find a reason to continue her efforts. The encouragement and support she receives and her self-confidence in her ability to birth have great influence on the progress of labor.

Contractions will generally get closer together and more intense as her labor progresses. Let her have full mobility, and do not keep her confined to the birthing area. Find ways to support her. If she likes to be touched, you can massage her shoulders, brush her hair, or even provide pressure on her hips or back. Be deliberate in your speech, speaking slowly and using a low tone. (This tends to be calming to everyone involved.) Again, keep breathing and remind her to breathe.

As labor progresses, the type of support you are providing may need to change. The mother may not want to talk or hear you talk. Some moms just need to hear that the caregiver (that's you) is not going to leave. Reassure her that you are there to support her through this normal process of birthing a baby. Let her know that you are going to do your best to make things better, but do not promise that everything will be fine. Do assure her that you are there to help, protect, respect, and honor her and the process.

One way to support a woman as labor progresses is to encourage her to move around or change position every 30 to 60 minutes. This is also a good time to remind her to hydrate and urinate. If the mom feels strongly about staying in a position that feels good, honor her wisdom to know her own body. One of the statements you may want to repeat often is, “Listen to your body.”

Sometimes a mom will tell you to go away. Do not leave! If it seems like more privacy might be helpful to her, or she is requesting it, you can try to sit close but out of sight. Many women do not want to be watched during labor. Sitting in the doorway and acting as a guardian is a good way to do this. Try not to be in a position where you are “looking down” on her. Sitting behind a barrier (like a hanging sheet or tarp), where you can still hear her, is also a good option. This way, you will be able to hear when her sounds change. Be especially aware of grunting or pushing sounds, as this often means that birth is imminent.

As the labor pains get stronger, try to assess how the mother is coping. One of the ways you can help is to have her concentrate on breathing. Slow abdominal breaths will help her remain calm, oxygenate her muscles, and supply much-needed oxygen to the baby. At a certain point in labor, however, abdominal breathing may no longer be effective. Regardless, you are there to remind her to breathe. Focusing on breathing may also prevent her from panicking.

It is especially important for a mother to breathe with a contraction. Encourage her to do so, and to continue this pattern of breathing with contractions. She will want to know if she and the baby are okay, and if what is happening is

normal. Verbal encouragement is key at this stage. Continue to be gentle and slow in voice and movement. She may not be able to carry on much of a conversation as the birth gets closer. She may not tolerate distractions from her work of labor. It is important to minimize the noise around her.

SIGNS THAT IT MAY BE TIME TO PUSH

There are several signs that are typical of the end of labor and the beginning of the pushing stage. The woman may begin making sounds like moaning or grunting during her contractions. The contractions will usually become very close together and may even seem to be on top of one another.

She may feel tired, shaky, panicky, or disoriented. She may be nauseated or even vomit. She may tremble uncontrollably or have hot/cold flashes. Women often feel rectal pressure as the baby's head moves down the birth canal. She may say that she "needs to poop" or "feels pressure." Sometimes this is the baby's head descending. If there is a bowel movement, discretely clear it away. Keep the birth area clean.

It is common at this stage of labor for women to say they can't do it anymore. This is often a signal that they are very close to the end. The last part of labor right before the birth can be the hardest for her (and you). This is when your support needs to be a quiet presence. Avoid talking during the contractions. Be the mother's guardian and protect her from unnecessary distractions.

THINK BEFORE YOU SPEAK

A woman in labor is in a vulnerable psychological space and is very open to suggestion. Therefore, it is extremely important that you monitor your words. Consider the phrase “map your words out on your tongue.” This means considering the implications and any possible interpretations of your words before speaking.

A mother may take to heart any comments, especially disparaging ones. They can have a long-standing effect. Years after the birth, women report being able to remember something said to them during their labor.

I cannot emphasize this enough: Encourage the mother during childbirth. Praise her progress. Even slow progress makes a difference. Do not be concerned with *her* language. She may say things that she doesn’t mean. Do not take anything she says personally. Remember, your impact on her mental state will affect her labor. Be calm.

THE ACTUAL BIRTH

When the woman begins pushing, have your hands ready. If you can do so without leaving her, wash your hands again. If you have access to sterile gloves, use them. She may need your encouragement to keep pushing. If this is her first baby, she

may question whether she is “doing it right.” Remind her that her body knows how to give birth. Trust her to know whether it is time to push. Encouraging her to push if she does not have the urge wastes valuable energy. She will likely know how she wants to push, and in what position. Remind her to listen to her body. She may tell you, “The baby is coming!”

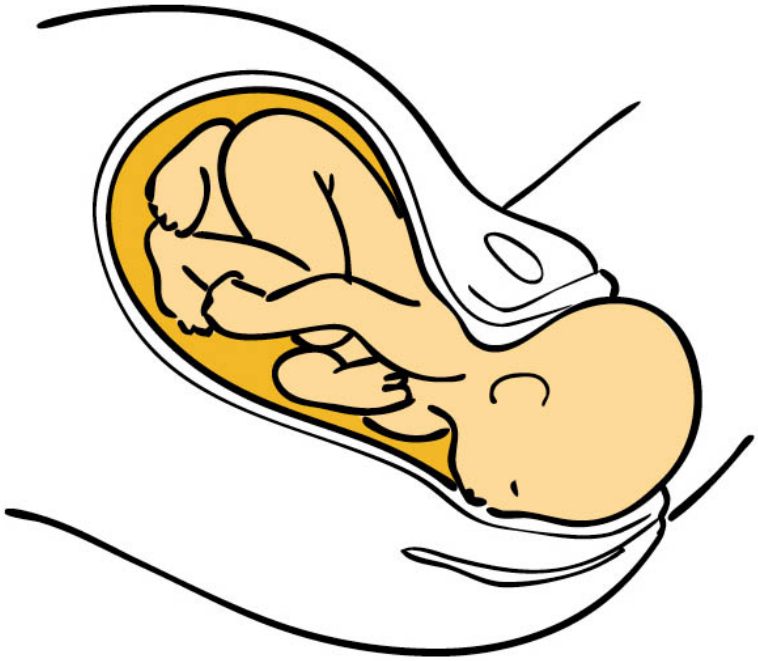
Support the baby’s head by allowing it to fill your hand as it emerges. You can prevent the head from emerging too quickly by having the mom blow (as if she were blowing out a candle). Panting breath patterns may also be helpful at this time. Sometimes forceful grunting is effective.

Between contractions, encourage the woman to breathe deeply and as normally as possible. The goal is to let the baby to be born, not to “deliver” the baby. Midwives often instruct mothers to “breathe their baby out.” Forceful pushing is usually not necessary at this time and may cause greater injury to the vaginal and perineal tissues.

Consider supporting the mother’s perineum. This means placing a hand (covered by a towel) on the tissue between the vagina and the anus. Provide gentle pressure only if you feel the baby is coming too fast. Remember, tears will heal. It may be appropriate to urge the mom to support the baby’s head and guide the baby out herself. This can be a very empowering experience that supports psychological healing in the case of childbirth during a disaster or other crisis situation.

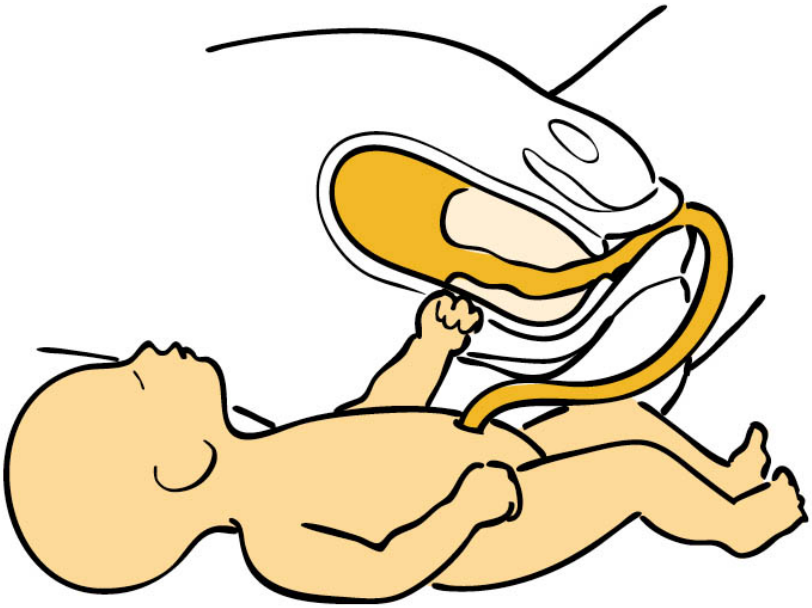
After the head emerges, you may have to wait for the next contraction for the body to follow. Give the baby time to realign its head with the body. You may not need to assist the birth of the body unless the cord is wrapped around the baby’s neck or the shoulders are stuck.

STAGES OF DELIVERY

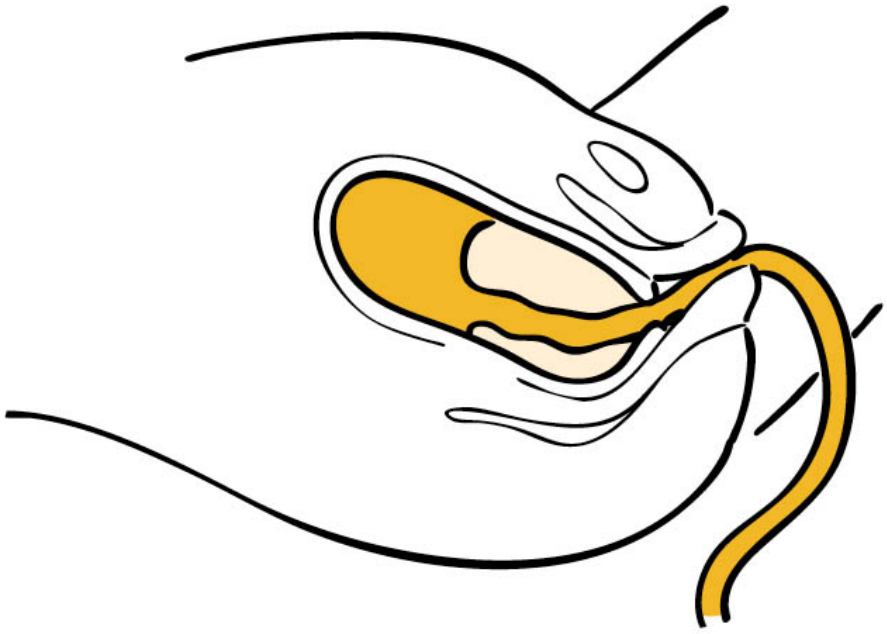


ABOVE: ***1.*** *Head crowns, then emerges*

ABOVE: ***2.*** *Shoulders and body follow*



ABOVE: ***3.*** *Umbilical cord intact; uterus begins to contract*



ABOVE: ***4.*** *Delivery of the placenta, usually after the cord is cut*

IF THE CORD IS AROUND THE BABY'S NECK

After the baby's head emerges, check to see whether you can feel the cord around the baby's neck. If it's there and has enough slack, you may slip the cord over the head or try to slide it over the shoulders as the body is being born with the next contraction.

If the cord is tight around the neck, without any slack for moving it, the best maneuver is to "somersault" the baby out. Simply tuck the baby's head and press its face toward the woman's thigh. This will allow you to unwrap the cord as the body is being born.

IF THE SHOULDERS ARE STUCK

If the shoulders do not come naturally with the contraction and pushing, you may have to assist. Gently cradling the baby's head with one hand around each ear, press the head toward her anus and then gently lift the head up. This back-and-forth motion may help release the shoulders. *Do not twist or pull on the head.* If the shoulders are still stuck, you may ask the woman to flip over onto her hands and knees. Now you can assist her in moving her hips from side to side. This will usually jostle the baby enough to release the shoulders.

If the baby still does not birth, place the mother flat on her back with her knees to her ears. If possible, she should lie just off the edge of a surface to allow her pelvis to open completely. It may be necessary to move her from this position (knees to ears) and back to hands and knees several times.

There are other internal maneuvers used to remedy stuck shoulders. However, these require additional hands-on training to be effective and to reduce the risk of harm to both mother and infant.

AFTER THE BIRTH

When the baby is born, note the time of birth. Not only will the parents likely want to know the time, but it can be important in monitoring postpartum complications. Dry the baby off quickly and thoroughly. Drying will also stimulate the baby to breathe. Place the baby on the mother's belly. It is important to have skin-to-skin contact; this means a bare chest and a naked baby. Make sure the mother's skin is also dry, and cover them both with a towel or light blanket.

While you are drying the baby and the mom, rub up the baby's back to encourage the newborn to cry. You can also flick the bottom of the baby's foot; this is startling but will not cause injury. Remember (and remind the mom) that the baby is still receiving oxygen through the umbilical cord. So don't panic if it takes a moment for the baby to initiate breathing on his or her own. Having the parents talk out loud to a baby often also helps.

Do not turn the baby upside down, spank it, or submerge it in cold water. These practices are outdated, not evidence-based, and may cause harm.

If the baby is not crying or breathing, encourage mom to talk to the baby. Clear the baby's mouth and nose by wiping the face with a cloth. If you need to suction out mucus, always clear the mouth first, then the nose. If the baby is still not breathing, cover its mouth and nose with your mouth and give a tiny puff of air—just to fill your cheeks, not a full breath. It is very important not to overinflate a newborn's lungs. Taking an infant CPR or a neonatal resuscitation course would be wise preparation in conjunction with this material.

For the first few hours after birth, it is best not to swaddle or dress the baby. Get the baby to breastfeed as soon as possible. Have the mom maintain skin-to-skin contact with her baby and keep a blanket over them both. You can use a wet cloth to wipe away birth fluids (babies do not need bathing in the first few days).

EXPELLING THE PLACENTA

The placenta (afterbirth) normally comes on its own within 30 minutes following the birth. The average amount of time for placental expulsion is 10 minutes, but it is not unusual for the process to take longer, especially in an unplanned emergency birth. Remind the mom that there are no bones in the placenta, so it is much easier to birth than the baby. She may feel fullness in her lower pelvic cavity, which is a cue that it's time for her to push again. It is also common to see a gush of blood

and/or lengthening of the cord when the placenta separates from the uterus. When the cord stops pulsing, it is an indicator that the placenta has detached. Watch for a rising of the fundus (top of the uterus), as this may alert you that the uterus is filling with blood.

Do not massage the uterus while the placenta is still inside. This may cause partial or premature separation of the placenta, which will increase bleeding.

Do not pull on the cord. However, if the mother is having difficulty expelling the placenta, you may choose to guide the cord in an up-and-down direction. If you do so, always place your nondominant hand firmly above the pubic bone to avoid causing uterine prolapse. Having the mother squat or assume an upright position sometimes helps the placenta come out. Please refer to the materia medica for childbirth for recommendations on herbal remedies that can be useful.

CUTTING THE CORD

The idea that the cord must be cut right after birth is a misconception. *You do not have to cut the cord*. If you expect to transport the mother and baby to higher care, or if you cannot tie off or clamp the cord in a clean method, it is better leave it attached. In certain situations, though, such as if a birth happened where animals might be interested in the smell, it would be important to separate the placenta from the cord and dispose of it.

If you are cutting the cord, sterilize the cutting utensil with fire or an alcohol-based herbal tincture. Although not done

often in Western culture, burning through the cord is the best option if no sterile tool is available. Simply lay the cord over a flame — like a votive candle — a few inches away from the baby and mother. (If you're using a candle, be sure to provide a way to catch the wax to prevent burns.) Burning through a cord takes 10 to 15 minutes but completely cauterizes the vessels, preventing infection.

Normally, there is no reason to worry about cleaning a cord stump, other than clearing away any discharge with warm water. But be prepared to clean the cord with alcohol or an herbal tincture if you are in a setting where the risk of exposure to microorganisms is high.

POSTPARTUM CARE

Congratulate the mom on a job well done. Let her bond with her baby and continue to monitor her for bleeding, infection, and shock. Provide hydration with water, juice, or oral rehydration solution. Feed her a high-protein meal, such as cheese, eggs, beans, or meat after the birth, and keep her well fed for the first 12 hours postpartum. She will need good nutrition to recuperate, as well as to create breast milk for the baby.

Encourage the mother to nurse the baby as soon as possible. Breastfeeding helps with the bonding process and provides a sense of normalcy in an abnormal situation. It's critical that the baby ingests the mother's first milk (colostrum), as it is vital for immune function.

To prevent infection, maintain cleanliness and consider using immune-boosting herbs like echinacea and yerba mansa.

If the mother has a tear and you have a way to heat water, consider a postpartum sitz bath with comfrey leaf after the first 24 hours.

If she has cramping, consider black haw, crampbark, motherwort, and wild yam. Reassure her that although they are uncomfortable, these cramps are necessary to stop the uterine bleeding and are normal.

DEALING WITH HEMORRHAGE

In a woman who has just given birth, bleeding that amounts to more than 2 cups, dizziness, and/or pallor can be signs of a hemorrhage. Consider what might be causing the bleeding. The most common cause is uterine atony, the inability of the uterus to contract. The place where the placenta detached has hundreds of vessels that must be stopped from bleeding. Just like you would apply pressure to an external wound, the uterus must contract to put pressure on this internal wound. You can check for uterine atony by feeling the abdomen just below or above the umbilicus. If the uterus is contracted, or “firm,” you should feel a grapefruit-size structure. If instead it feels like gelatin, the uterus is said to be “boggy,” a sign that it has not contracted. In this situation, getting the uterus to contract is your first concern.

Check the placenta and amniotic sac to make sure they are complete. If pieces of the placenta or membranes are still inside the uterus, it may be unable to contract, causing bleeding. You can administer blue cohosh, dong quai, and/or

cotton root bark to encourage delivery of any pieces that remain inside.

Manual removal is a medical procedure that requires extreme caution and should only be done by someone who has been trained in the procedure.

Once the placenta is out, there may be a gush of blood. However, if the herbs do not help, you may have to intervene. Sometimes just rubbing the uterus encourages it to contract. Keep massaging until it firms up, checking every 2 to 5 minutes to make sure it stays firm. If massage does not stop the bleeding, keep one hand over the uterus and place your other hand above the pubic bone, compressing the uterus between your upper and lower hands. Try to grab hold of the uterus and massage it firmly to create a contraction. Applying pressure above the pubic bone can also help.

Clots filling the uterus can also inhibit the uterine contractions that are needed to stop a hemorrhage. If massage doesn't help the uterus contract and the bleeding stop, press down on the top of the uterus, directing pressure toward the vaginal opening, to get clots out. This will be very uncomfortable for the mother but is usually effective in removing clots.

Encourage urination, as hemorrhages are often caused by a full bladder, which can prevent the uterus from contracting.

If they are available, administer hemostatic and oxytocic herbs to the mother immediately after the birth. (Hemostatic herbs stop bleeding. Oxytocic herbs encourage contraction of uterine smooth muscles.) If the placenta has not birthed, blue

cohosh, cotton root bark, and dong quai are recommended. See the materia medica for a fuller discussion of childbirth herbs.

In addition, you can increase the body's own production of oxytocin, which will help control the bleeding, by placing the baby near the breast and encouraging breastfeeding. Even if the baby is not nursing, touching the nipples will stimulate the body's oxytocin. If the baby cannot be placed with the mom, someone (you, her companion, or the mother herself) should do aggressive nipple stimulation.

If the mother continues to bleed, especially if no emergency medications or herbs are available, have her place a small chunk of the placenta inside her cheek or in her rectum. The placenta is full of hormones that will help manage a hemorrhage when there are no other options. If the placenta has not been born, a piece of the cord might also be effective.

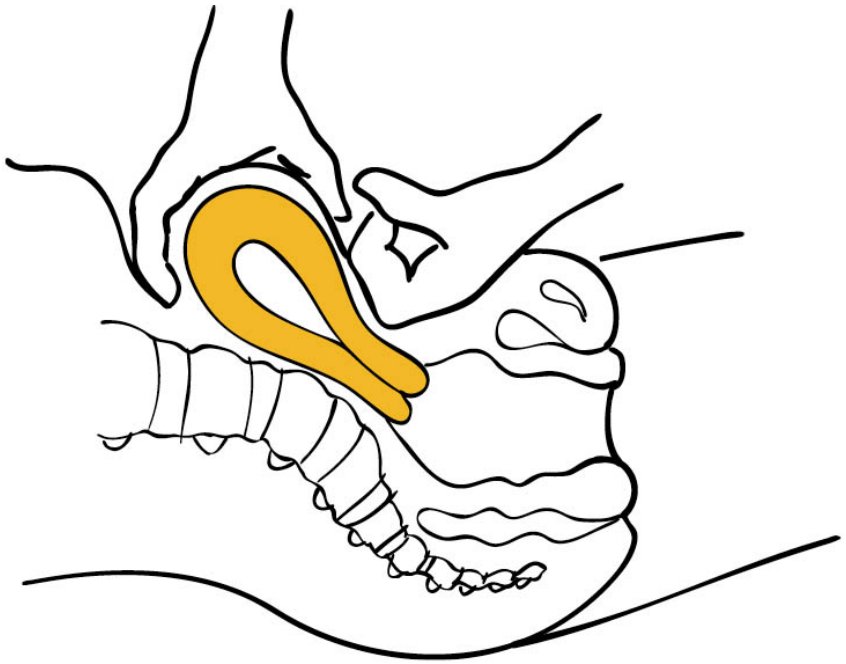
If the mother is beginning to show signs of shock, elevate her legs straight into the air. Keep her warm by covering her with any dry cloth available. Keep her conscious and conversing by asking her simple questions or encouraging her to talk to her baby. Keep her focused on her baby. Give drop doses — 1 or 2 drops every 5 minutes — of lobelia tincture until she is stable. Keep her hydrated with water or oral rehydration solution (see here). If you have the supplies and training, you may choose to start an IV to replace the fluid loss.

SITZ BATH PREPARATION

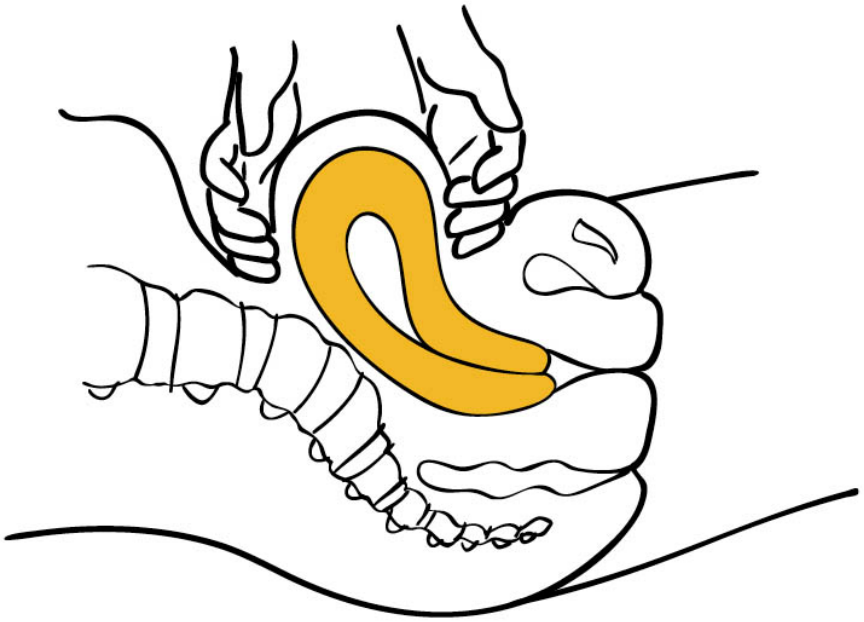
Many herbs can be used postpartum for a healing sitz bath. Comfrey and calendula are particularly effective, and you could add to them whatever other appropriate astringent herbs are available, such as lavender flowers and rose petals. Decoct a large handful of herbs in a quart of water for 20 minutes, then strain. Have the mother sit in a shallow container or a regular bath, with extra decoction added as desired.

Alternatively, you could use the same sitz bath herbs as a vaginal steam, by having the mother sit on the edge of a chair over the warm decoction with a blanket or towel wrapped around her lower body. But please be cautious with how close you position the mother to a vaginal steam, as steam can burn! She can sit in the bath or steam for as long as she likes; 20 minutes is a reasonable period.

STOPPING UTERINE BLEEDING



ABOVE: ***1.*** *Applying pressure above the pubic bone*



ABOVE: ***2.*** *Massaging the uterus*

DEALING WITH A TRAGIC OUTCOME

Although birth is normal, there are tragedies, even under the best circumstances with the best facilities. The possibility of maternal or infant death must be mentioned here, even when discussing "normal birth." In disaster and crisis situations, rates of emergency births, premature births, and miscarriages all go up. If a mother has a placenta previa and the placenta is birthed first, her baby will die, and she risks hemorrhaging. If she has a ruptured uterus, both she and her baby are at risk. If the baby's arm or the umbilical cord is born first, the baby will die unless the mother can have a Cesarean section. Sometimes, babies become stuck in the process of labor and need surgical intervention. All of these scenarios, although rare, are possible. It is important to be psychologically prepared for any possible outcome.

Do not tell a laboring mom that everything will be okay. Be honest and tell her that you will do everything you can to help. If death does happen, try to give extra emotional support. Knowing the mom's spiritual and religious practices can be important in supporting her. Whether the baby survives or not, the placenta still needs to be expelled. The mother still needs to finish the birth process, and you still need to make sure she is physiologically stable.

Let the mom grieve in whatever way she wants; there is no wrong way to grieve. If she wants to hold the baby, let her. If she does not want to see the baby, gently wrap it in a baby

blanket or whatever nice material you have and set it aside for now. She may change her mind and want to see the baby later or provide a proper burial or memorial service.

THINGS TO REMEMBER

- Birth is *normal*.
- Breathe. Stay calm. Panic is infectious.
- Encourage the mom and help her to be comfortable. Do not force her to do anything.
- Do *not* interfere with the birth process. Offer ideas to help her be more comfortable, especially in regard to changing position. Encourage her to empty her bladder regularly.
- Nourish and hydrate the mother before and after the birth. Do *not* restrict dietary intake during labor. Provide high-protein nourishment following the birth.
- Provide privacy but don't leave the mom alone.
- If the baby's body is not born spontaneously, use an up-and-down motion with the head. You can also try a different position such as on hands and knees. Do *not* twist or pull on the baby's head.
- Do *not* press on the mom's belly (fundal pressure) to get the baby out.
- Keep the birth area clean and the mom clean.

- After the baby is born, stimulate breathing by rubbing up the baby's back with your hand or a towel, or flicking the soles of the baby's feet. Do *not* slap the baby to get it to cry.
- Use the cord as a guide for delivering the placenta, but do *not* pull on it.
- Encourage breastfeeding as soon as possible and encourage skin-to-skin contact to help stabilize and keep the baby warm.
- Clamp or tie off the cord and separate it from the placenta with a sterilized knife if necessary.
- After the birth, monitor the mother for bleeding.
- Get details of the mom's history and write them down for records and transport. Do not forget details such as the time of birth, witnesses, and location.

MATERIA MEDICA FOR CHILDBIRTH

CAUTION: Before administering herbs to a woman who is pregnant, in labor, or postpartum, it is best to get training from an herbalist familiar with using herbs in these situations. Always use caution when recommending herbs during pregnancy. Be aware that some of these herbs are only used during specific times in pregnancy. Avoid all herbs in the first

trimester unless for the prevention of miscarriage. Avoid high doses of herbs during pregnancy, birth, postpartum, and breastfeeding. Many of the herbs commonly contraindicated during pregnancy are used at the birth to get the baby out. Although they can be used for labor, it is important to use them sparingly.

A NOTE ABOUT DOSAGE: Dosage for pregnancy and labor tends to be on the lower side. Dosages in this chapter are given in drops instead of teaspoons (20 drops is equivalent to 1 ml).

Bethroot

(Please use sustainably grown bethroot, as it is endangered.)

Properties	Usage	Dosage and Notes
Astringent, tonic, antiseptic	A classic birth herb; helps regulate contractions; use for stalled contractions and for uterine hemorrhage.	Use only during the last weeks of pregnancy and during labor. For starting labor, bethroot works best in a formula with cotton root bark and schisandra (8 ml bethroot/10 ml cotton root bark/12 ml

Bethroot (Please use sustainably grown bethroot, as it is endangered.)		
Properties	Usage	Dosage and Notes
		schisandra). Give 20 drops every 15 minutes for the first hour, then 20 drops every 30 minutes for the second hour, then 20 drops an hour for an additional 4 hours. Rest for 4 hours and repeat once. This can be done for 3 days safely.

Black Cohosh		
Properties	Usage	Dosage and Notes

Black Cohosh

Properties	Usage	Dosage and Notes
Uterine toner, emmenagogue, antispasmodic, alterative, nervine, hypotensive, antidepressant	Helps regulate contractions during labor; helps with muscle aches and pains.	Use only during the last weeks of pregnancy. This herb can be used to help get labor started, usually in formulation with other herbs. Consider giving 10–20 drops every 15 minutes for an hour to help with irregular, ineffective contractions.

Black Haw

Properties	Usage	Dosage and Notes

Black Haw

Properties	Usage	Dosage and Notes
Antispasmodic, nervine, hypotensive, astringent	Helpful for relieving cramps, resolving false labor, and preventing possible miscarriage; considered helpful for relieving muscle cramps and lowering blood pressure.	Use for miscarriage with cramping. It's best taken in a formula but can be taken on its own: 20 drops of tincture every 15 minutes for 1 hour, and then 20 drops an hour for up to 6 hours, as needed. Can be used interchangeably with crampbark (see here).

Blue Cohosh

Properties	Usage	Dosage and Notes

Blue Cohosh

Properties	Usage	Dosage and Notes
Emmenagogue, antispasmodic, diuretic, diaphoretic	Recommended to help expel the placenta. Traditionally used with black cohosh to start labor, but now contraindicated because of its potential to trigger newborn cardiac issues.	Use only after the baby is born. For placental delivery, use in formula with equal parts of Dahurian angelica or cotton root bark: 10 drops of tincture every 5–10 minutes for 30 minutes.

Comfrey

Properties	Usage	Dosage and Notes

For more on this herb, see here.

Comfrey

Properties	Usage	Dosage and Notes
Vulnerary, demulcent, anti-inflammatory, astringent, expectorant, wound healing	Restores and regenerates skin; use for healing vaginal tears postpartum.	For external use only. Comfrey is the most important ingredient in a postpartum sitz bath or vaginal poultice. Combines well with calendula. Note: Wait 24 hours before administering a sitz bath or a vaginal poultice to allow the body to begin healing on its own.

For more on this herb, see here.

Cotton Root Bark

Properties	Usage	Dosage and Notes
Cotton Root Bark		

Properties	Usage	Dosage and Notes
Antiviral, antibacterial, galactagogue, antifertility, abortifacient, demulcent, expectorant, aphrodisiac	One of the strongest oxytocic herbs; highly valued by midwives. Helps get labor started; increases and strengthens contractions; is useful for stopping hemorrhages and encouraging delivery of the placenta.	Use only during labor and postpartum. This herb has a cumulative effect and should not exceed 100 drops in 24 hours. Can help get labor started and strengthen contractions, usually in formulation with other herbs (see bethroot). Can be used with equal parts blue cohosh and dong quai if placenta is not coming naturally. Give 30 drops

Cotton Root Bark		
Properties	Usage	Dosage and Notes
		every 3 minutes for up to 4 doses. It can also be used by itself to stop hemorrhage: 15 drops every few minutes. Consider using in combination with a piece of the placenta (see here).

Dong Quai		
Properties	Usage	Dosage and Notes

Dong Quai

Properties	Usage	Dosage and Notes
Tonic, sedative, hormone balancing, nourishing, analgesic, oxytocic, emmenagogue, circulatory stimulant, antispasmodic	Encourages expulsion of the placenta.	Used to expel placenta — 30 drops every 3 minutes for up to 4 doses. Can use a formula of equal parts of dong quai, blue cohosh, and cotton root bark at the same dosage.

Echinacea

Properties	Usage	Dosage and Notes

For more on this herb, see here.

Echinacea

Properties	Usage	Dosage and Notes
Immune stimulant, antibacterial, wound healing	Stimulates white blood cell production; can be used to prevent or treat infection before, during, and after the birth.	Can be used throughout pregnancy. Use as a simple or combine with yerba mansa: 30 drops 4 times daily.

For more on this herb, see here.

Ginger

Properties	Usage	Dosage and Notes

For more on this herb, see here.

Ginger

Properties	Usage	Dosage and Notes
Carminative, digestive, cardiotonic, antitussive, anti-inflammatory, diaphoretic, emmenagogue, circulatory stimulant	Very warming; can help with nausea and vomiting.	*Do not use* in cases of or after hemorrhage due to stimulation of circulatory system and risk of increased bleeding. Often best as a tea for nausea: 1 tablespoon of grated ginger steeped in 1 cup of water.

For more on this herb, see here.

Hawthorn

Properties	Usage	Dosage and Notes

Hawthorn

Properties	Usage	Dosage and Notes
Diuretic,astringent, nervine, hypotensive, cardiotonic	Helps resolve high blood pressure, palpitations, and anxiety.	Very safe. Give 30 drops of tincture 3 times daily. Can also combine 1 teaspoon dried herb with 1 or 2 cups of linden and hibiscus tea.

Hibiscus

Properties	Usage	Dosage and Notes
Diuretic, astringent, demulcent, hypotensive; contains vitamin C	Helps reduce swelling; effective in lowering blood pressure.	Brew as a hot or cold tea: 1 teaspoon of herb to 1 cup water. Combines well with hawthorn and linden.

Lobelia

Properties	Usage	Dosage and Notes
Expectorant, emetic, anti-asthmatic, stimulating antispasmodic, diaphoretic, diuretic, nervine	Softens a rigid cervix.	Dosage for a rigid cervix: 2 drops applied intravaginally with gel. Can also be massaged onto the belly.

For more on this herb, see here.

Motherwort

Properties	Usage	Dosage and Notes

For more on this herb, see here.

Motherwort

Properties	Usage	Dosage and Notes
Nervine, emmenagogue, antispasmodic, hepatic, cardiotonic, hypotensive, cardiorelaxant, sedative, hypnotic	Helpful for nervousness; can calm people who are present but not coping well.	Dosage: 30 drops every 1–2 hours, for a total of up to 4 doses.

For more on this herb, see here.

Nettle

Properties	Usage	Dosage and Notes

For more on this herb, see here.

Nettle

Properties	Usage	Dosage and Notes
Astringent, diuretic, tonic, hypotensive, nutritive, alterative, anti-inflammatory; also mineral-rich, with high levels of calcium, iron, and some protein	Considered a blood builder; can aid recovery from a heavy bleed or hemorrhage.	Combine with raspberry leaf to make a great postpartum restorative and nutritive tea.

For more on this herb, see here.

Partridgeberry

Properties	Usage	Dosage and Notes

Partridgeberry

Properties	Usage	Dosage and Notes
Stimulates labor, emmenagogue, diuretic, astringent, uterine tonic	Tones and prepares the uterus for birth; used to prevent hemorrhage, nourish the reproductive system, and support postpartum healing.	Use during the last trimester only. Partridgeberry is often used in formulation with other classic pregnancy herbs, such as red raspberry and nettle, as a tea for labor preparation.

Raspberry Leaf

Properties	Usage	Dosage and Notes

Raspberry Leaf

Properties	Usage	Dosage and Notes
Astringent, uterine tonic, nutritive, antispasmodic; rich in several vitamins and minerals, especially magnesium	The primo woman's herb: nourishes the reproductive system; helps ease labor pains; builds supply of breast milk; tones the uterus; improves the quality of contractions; and decreases constipation.	Safe to use throughout pregnancy but avoid medicinal (heavy) dosages in early pregnancy. A classic tea recipe is 1 part each red raspberry leaf, nettle leaf, and oatstraw to ½ part alfalfa leaf. Drink 1–2 cups daily in preparation for birth, starting as early as 20 weeks.

Schisandra

Properties	Usage	Dosage and Notes

Schisandra

Properties	Usage	Dosage and Notes
Nourishing tonic (used as a food), astringent, liver protectant, restorative	Used to stimulate labor and for exhaustion and fatigue in labor.	Do not use before 37 weeks. To get labor started, use alone: 20–25 drops every hour for 5 hours. Rest and try again in 24 hours. See also bethroot for a formula that includes schisandra for starting labor. For exhaustion and fatigue in labor: 5 drops as needed, but do not exceed 25 drops in 1 hour as it can cause very fast labors.

Shepherd's Purse

Properties	Usage	Dosage and Notes
Astringent, diuretic, anti-inflammatory, hemostatic, antihemorrhagic	Helps control heavy menses; can stop a hemorrhage within seconds.	Use only postpartum. *Do not use* before the placenta has been expelled. To stop bleeding, a formula of shepherd's purse and yarrow will usually work within 5 minutes. Give 30 drops every 2–3 minutes while massaging uterus for a total of 4 doses.

Skullcap

Properties	Usage	Dosage and Notes

Skullcap

Properties	Usage	Dosage and Notes
Nervine, sedative,hypnotic; very calming	Can be used when mom needs extra support at any time during labor.	Dosage during labor: Start with 5–10 drops and determine a second dose based on mother's response. She may need only 5 drops. She may need more. Do not exceed 100 drops in 12 hours.

For more on this herb, see here.

Wild Yam

Properties	Usage	Dosage and Notes

For more on this herb, see here.

Wild Yam

Properties	Usage	Dosage and Notes
Strong antispasmodic; anti-inflammatory; analgesic	Relieves nausea and vomiting; helps with uterine pain, contractions, and unproductive labor.	For nausea and vomiting: 5–10 drops every 10 minutes for 4 doses. For uterine pain and unproductive contractions, combine wild yam and black cohosh in equal parts: 10–15 drops every 30 minutes for 3 doses.

For more on this herb, see here.

Yarrow

Properties	Usage	Dosage and Notes

Yarrow

Properties	Usage	Dosage and Notes
Diaphoretic, hypotensive, astringent, anti-inflammatory, diuretic, antimicrobial, bitter, hepatic, antihemorrhagic, hemostatic	Reduces postpartum bleeding.	Use only immediately postpartum. Give 10–15 drops every 5 minutes for 4 doses. *Do not use* during pregnancy or breastfeeding.

For more on this herb, see here.

Yerba Mansa

Properties	Usage	Dosage and Notes

For more on this herb, see here.

Yerba Mansa

Properties	Usage	Dosage and Notes
Tonic, astringent, carminative, antiemetic, disinfectant, diaphoretic, emmenagogue, warming alterative	Soothes and heals mucous membranes and lungs; useful during any infection.	Safe for use during pregnancy and postpartum. 30 drops 4 or 5 times a day for infection. Combines well with echinacea at the same dosage.

For more on this herb, see here.

PART 4

MATERIA MEDICA

70 HERBS TO KNOW

It was difficult to pick the herbs to include in this materia medica. If I could, I would list all 350-plus herbs that I work with regularly—and take them all with me wherever I set up an herbal clinic. However, on all the trips my Herbal Medics program has made to provide free herbal clinics in medically underserved communities, I've always had to choose the materia medica based on limited packing space and weight. For our very first trip to Nicaragua in 2011, I took tinctures of about 40 simples (single herbs) and some 20 different formulas. We worked with upward of 90 clinic visitors per day for several days, with great follow-up results. Our travel apothecary now includes well over 100 simples and a few dozen formulas.

For this book, I had to practice that same restraint, while still including the herbs that I feel produce the most consistent and reliable results from person to person, as well as herbs that work across multiple body systems (especially when working with different parts of the plant). I try to avoid herbs that are at severe risk of being overharvested, and in the few exceptions to this rule, I ask that you do your best to obtain your herbs in an ethical manner, whether wildcrafting them yourself or buying from a supplier. I recommend growing as many of your own herbs as possible so that you come to know each plant through its life cycle.

When buying plants, try to support organic herb growers, especially small businesses, whenever you can. Don't buy herbs from any supplier that does not support ethical wildcrafting and harvesting in their own selection process and that does not

carefully check the quality and accuracy of the product they are selling. (See here for a short list of suppliers I use.)

For information on making tinctures, decoctions, poultices, and other forms of medicine, refer to Chapter 5. See Chapter 6 for some suggested formulas for specific conditions and diseases.

ALGERITA

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Agarita, desert barberry	*Berberis trifoliolata*	Berberidaceae

Algerita is found mainly in the southwestern United States, but I include it here because it is extremely powerful and good medicine for infections of the gut and skin. Algerita is a barberry, and there are several other barberry plants (falling into both the *Berberis* and the *Mahonia* genera) growing all over North America that are mostly analogous to algerita for making medicine.

PARTS USED | **ROOT, LEAF**

MAIN ACTIONS

- Antibacterial, antiviral, wound healing (mucosal vulnerary)
- Antiparasitic (antiprotozoal, anthelmintic)

- Digestive bitter, liver and gall bladder stimulant, astringent

MEDICINAL USES

Algerita root contains berberine (see here), which makes it useful in a variety of formulas.

Gut infections and diarrhea. Taken immediately at the first sign of gastroenteritis of any type, such as the onset of traveler's diarrhea, algerita root can be effective in resolving the issue. It is also a very useful herb for inflammation of the gut, leaky gut syndrome, small intestinal bacterial overgrowth (SIBO), and other inflammatory conditions of the gut epithelium. Algerita is a useful herb in any formula for bacterial or protozoal gastroenteritis as well.

Liver decongestant. Algerita root can be useful in treating chronic issues of the gut that include an overtaxed liver. (See here for a more detailed discussion of liver-supporting herbs.)

Wound treatment. Powdered algerita root is extremely useful as a wound powder or an antibacterial powder for the skin, the mucous membranes of the throat and mouth, or any other area where a wound powder can be placed as a poultice or even plaster.

Nausea. Algerita leaf is useful for nausea caused by anxiety, motion sickness, general dyspepsia, morning sickness, and acute mountain sickness (AMS). I have found the leaf to be effective in the same way that ginger (*Zingiber officinale*) is.

Algerita leaf is cooling, sour, and slightly sweet, however, whereas ginger is heating. I sometimes use the leaf by itself but more often combine it with ginger or one of the artemisia species, like wormwood (*Artemisia absinthium*) or estafiate (*Artemisia ludoviciana*), for nausea.

SPECIAL NOTES

Berberine-rich plants like algerita are very useful for infections in the gut, but only tiny amounts of berberine absorb through the gut wall and make it into the bloodstream. For treating internal infections such as UTIs or respiratory ailments, oral administration is not particularly effective.

Formulating berberine with milk thistle or taking it with TPGS (tocopheryl polyethylene glycol succinate, a water-soluble form of vitamin E), may increase the bioavailability of berberine through the gut, but to deliver berberine into the bloodstream at a greater rate, choose a method such as sublingual, intranasal, enema, or inhalation via a nebulizer.

PREPARATION AND DOSAGE

The root can be used as a poultice, soak, or wash directly on an infected wound.

Root. Unlike most alkaloids, berberine is much more water soluble than alcohol soluble, so a lower-percentage alcohol extraction (30 to 40 percent ABV) will be more effective. The root can be tinctured fresh or dried, or it can be dried and powdered

for internal or external use. The root tastes very bitter due to the berberine; taking it in a sour drink is helpful.

I try to tincture this root as fresh as possible because it is already difficult to cut. I use large garden loppers to cut the root into pieces the size of a quarter or smaller, then place them in alcohol (or glycerin, if I'm making a glycerite) as a maceration tincture.

The root can be ground fresh or dried, but it will destroy a regular coffee grinder. You'll need a commercial-grade herb grinder or possibly a Vitamix with a dry blade kit.

Adult tincture dosage (root): ½–1 teaspoon of 1:2 tincture, 3 or 4 times per day

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Leaf. The leaf can be prepared as a maceration tincture (fresh or dried leaf in 40 percent ABV) or glycerite. It can also be eaten or chewed fresh (clip off the spiky tips first) or infused to make a sour and slightly sweet tea; for this purpose, the fresh leaf is preferable over the dried leaf.

Adult tincture dosage (leaf): ½–1 teaspoon of 1:2 tincture, 1–6 times per day

CAUTIONS/CONTRAINDICATIONS

Algerita root should be taken internally for only 3 to 4 weeks at a time, followed by at least a few weeks of rest. The leaf is quite safe, but if it is necessary to use it for nausea for an extended period, look for the underlying causes that should be addressed.

Avoid use during first trimester of pregnancy and use with caution for the last two trimesters and during lactation.

ANDROGRAPHIS

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Green chiretta	*Andrographis paniculata*	Acanthaceae

This unassuming but gorgeous little annual packs a lot of power and is an herb that should be in any materia medica. Nicknamed “the king of bitters,” it can have strong cholagogue actions on the liver while also increasing the efficiency of the digestive tract.

PART USED | **LEAF**

MAIN ACTIONS

- Antifungal, antiprotozoal, antiparasitic
- Antiviral, antibiotic (biofilm busting)
- Anti-inflammatory
- Immune supportive
- Liver support and decongestion
- Neutralizing venomous snakebites

MEDICINAL USES

Antiparasitic/antifungal. It is effective topically in ringworm (antifungal) formulas as well as taken internally for candidiasis (i.e., small intestinal fungal overgrowth). I have also used it successfully in antiparasitic formulas, specifically for roundworm (*Ascaris lumbricoides*) infections.

Liver Support. Andrographis is a potent liver-supportive and liver-decongestive herb. As could be expected of any bitter herb, it assists digestion while also helping the liver in its role of detoxifying the blood. In this role, it can assist in the stabilization and lowering of blood sugar as well as support for liver disease such as hepatitis. Andrographis can be used in its support of the liver similar to the way that milk thistle is used, and arguably will work as well in that regard also.

Lyme disease. Well-known herbalist Stephen Buhner talks about andrographolide—a constituent found in andrographis leaf—as one of several compounds that are useful in both the prevention and the treatment of acute onset of Lyme disease. I have had several Lyme cases that have responded to andrographis, particularly when used in combination with other herbs and antibiotics during integrative management of late-stage Lyme disease.

Some or most of the antiviral/antibacterial as well as the anti-inflammatory effects of andrographis may relate to its ability to modulate the human immune system — again arguably as a primary effect from andrographolide. This can mean that the innate immune system is stimulated to help defend the body through both increased count and activity of

macrophages, for instance, as well as a downregulation of autoinflammatory and autoimmune cells.

Snakebites. Andrographis has a history of folk use as an herb for venomous snakebites in India. Research has shown it to be highly effective at neutralizing hemotoxic effects of the venoms tested, in particular inhibiting the actions of phospholipase A2 (PLA2), an enzyme found in several snake venoms that induces inflammation and permeability of the structures around the bite area.

Viral infections and immune support. Andrographis is a wonderful herb to consider for everything from a cold and flu formula (combined with echinacea and zinc) to a general immune-boosting formula. It has antiviral effects on several types of viruses as well, including herpes family viruses. It has been shown to support both the innate and adaptive immune system in its ability to enhance natural killer (NK) cells and cytotoxic T-cells, giving it a broad spectrum of immune support.

Other uses. Andrographis has also been shown to have antimalarial effects, particularly when combined with turmeric. I have even used this amazing herb in anti-inflammatory protocols, particularly for autoinflammatory disease processes like rheumatoid arthritis and Crohn's disease.

SPECIAL NOTES

Andrographis has come to the forefront in working with COVID-19 cases. Both internal dosage and steam inhalation seem to

have a positive effect on folks affected with respiratory symptoms. Its combination of immune, anti-inflammatory, and antiviral properties make it a very powerful herb to consider in COVID-19 formulations, both as a preventative and for treating the disease.

PREPARATION AND DOSAGE

It is certainly easier to use andrographis for topical applications than internally because of its extreme bitterness. Some people find it almost impossible to swallow. A glycerite (or a multifractional extract with 30 to 40 percent glycerin) may make it slightly more tolerable, but it will still be difficult for a lot of people to take. Options that bypass (some of) the taste issue are intranasal, steam inhalation, or nebulizer.

Capsules

Because of the intensely bitter taste, I do not recommend using andrographis in a tea. In fact, even using it in a tincture can make a formula almost unpalatable. If you are taking consistent dosages, it is far easier to take it in capsule form.

Adult capsule dosage: 300 mg to 1+ grams per day, depending on the severity of the illness and the potency needed

Tincture and Multifractional Extract

If you do tincture andrographis for use in formulas, it is best extracted in at least 70 percent ABV alcohol, especially if you are not heating the extraction. For a multifractional extract, I decoct first in water, adding enough glycerin at that stage to make at least 30 percent of the final volume (this helps a bit with the bitter taste as well).

Then strain and percolate or wash the marc in enough 95 percent alcohol to give you about 30+ percent ABV in your final product (final percentages are roughly 30 percent ethanol, 30 percent glycerin, and 40 percent water).

Adding heat (about 140°F/60°C) to any extraction (water, alcohol, or both) will greatly increase the andrographolide yield. The extract is almost always going to be formulated with other herbs, if only for palatability.

Adult Tincture OR multifractional extract dosage: ½–2 teaspoons of 1:4 tincture or 1:8 multifractional extract, 3 or 4 times per day

CAUTIONS/CONTRAINDICATIONS

Avoid andrographis during pregnancy and while breastfeeding. Although it has anti-inflammatory effects on the gut tissue, in high doses it can also irritate the gut over time. In rare cases, it can cause mild allergic reactions (like hives), dizziness, and hea157rt palpitations.

If you are using andrographis as part of a Lyme disease protocol, be aware that it may cause a worsening of symptoms as the bacteria die off and release toxins into the system. This is

called a Herxheimer's reaction and should be monitored to reduce the dosage of andrographis (while also adding or even up-dosing other liver, kidney, and cardiovascular support herbs) if the reactions are too severe.

ARNICA

BOTANICAL NAME:	**FAMILY:**
Arnica chamissonis, *A. montana*	Asteraceae

Arnica is well known for its superlative ability to help the body heal from bruising, inflammation, and soft tissue injury. *A. chamissonis* is medicinally analogous and much easier to cultivate. *A. montana* is overharvested and potentially at risk in the wild. Try to buy this plant from an organic grower, or at least ascertain that you are buying from a source that ethically wildcrafts it. A valid substitute for either species is camphorweed (*Heterotheca* spp.), sometimes called "Mexican Arnica."

PART USED | **FLOWER**

MAIN ACTIONS

- Anti-inflammatory
- Thrombolytic (breaking up blood clots)

MEDICINAL USES

Inflammation. This plant has been well studied for its anti-inflammatory effects both for treatment of inflammation-related pain (i.e., osteoarthritis) and for local inflammation directly related to injuries like sprains and strains.

Blood clots. As a thrombolytic, arnica is similar to yarrow in helping to break up the “trash” left behind during a soft tissue injury. It appears to speed local inflammation processes and allow injured tissue to move into the proliferative processes of healing that follow the initial inflammatory response.

SPECIAL NOTES

While it is dangerous in anything above dropwise dosage, arnica taken internally can assist the body and mind in dealing with trauma and shock, including psychogenic shock.

PREPARATION AND DOSAGE

The most common and useful application of arnica flowers, fresh or dried, is as a liniment, salve, poultice, hot compress, or plaster placed on unbroken skin and allowed to breathe. It can also be used to soak an injury in an herbal bath.

Internal Use

Arnica can be effective internally if used with caution. It can be taken as a weak tea or as a tincture in a dropwise dosage. An adult dose would be a few ounces of tea sipped over the course of an hour or so. The calming effects of the herb should start to present within minutes, and ingestion of the tea can stop (if desired) at the point that the person is feeling better. For a tincture, I either macerate or percolate the flowers at a 1:3 ratio.

Adult tincture dosage (dropwise): 10–20 drops of 1:3 tincture per day maximum (see Special Notes and Cautions/Contraindications)

CAUTIONS/CONTRAINDICATIONS

Primary cautions with arnica involve taking it internally or applying it to open wounds and/or mucous membranes. Internal usage can cause stomach upset, diarrhea, nausea, and vomiting. Dropwise internal dosage, as outlined above, is safe, but this herb should be used with caution even in tiny dosages. Avoid using it at all internally with any type of blood thinner medications such as warfarin.

ASHWAGANDHA

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
	Withania somnifera	Solanaceae

Indian ginseng		

Ashwagandha translates roughly from Sanskrit to mean “the smell of a horse,” though this herb is considered to impart equine strength and vitality rather than odor. This fantastic multifaceted herb supports a plethora of effects and responses in the human body.

PART USED | **ROOT**

MAIN ACTIONS

- Adaptogenic, immune supportive
- Hepatoprotective
- Cardioprotective
- Anti-inflammatory
- Supports the nervous system
- Supports mitochondrial function

MEDICINAL USES

Ashwagandha is often used to help the body cope with stress, in particular through the adrenal system. It helps normalize the body’s reactions to stress and helps the recovery process.

The botanical name *somnifera* indicates that this plant helps provide restful sleep, yet it is not a soporific per se. Although it does promote a sense of well-being and helps the body find sleep, seemingly paradoxically it also supports strong metabolism and helps the body recover from fatigue, stress,

nervous exhaustion, and a low or weak libido. In my experience, many people find that ashwagandha helps them feel focused and relaxed, yet also energetic. After a few hours of this feeling, it is easier to rest and fall into a peaceful sleep.

Immune support. Ashwagandha goes well in immune support formulas, in particular as a supporter of adaptive immune processes. It is undoubtedly a useful tissue healer (for soft tissue and bone) and can help the body recover from radiation and chemotherapy damage.

Nerve support. I use this herb often in nerve support or nerve repair formulas (particularly for neuromuscular junction and myelin sheath damage). I have used it successfully in nasya formulas for symptomatic and (arguably) reparative treatment for central nervous system damage when mental deficits are involved. This can include symptoms such as “brain fog,” chronic fatigue, lack of ability to concentrate (as might be the case with damage from late-stage Lyme disease or meningitis), and severe pain that is likely related to neuralgia of the face or head (e.g., trigeminal neuralgia or migraines).

Neuro support formulas. I like to use ashwagandha in formulas with herbs like lion’s mane (*Hericium erinaceus*), cordyceps (*Cordyceps sinensis*), Japanese dogwood (*Cornus officinalis*), and Chinese black cardamom (*Alpinia oxyphylla*). Note that this formula is very energizing and should not be taken within about 6 hours of going to bed, as it may make it difficult to fall asleep.

Thyroid support. This herb is popular in formulas for hypothyroid conditions, which makes sense considering the relationship between adrenal function and thyroid pathology. However, using herbs to deal with hypo- or hyperthyroid conditions in a symptomatic approach is a hit-or-miss proposition without reviewing a full wellness plan and monitoring thyroid hormone levels. I would advise against using this herb by itself as home therapy for hypothyroid conditions without the help of an experienced clinical herbalist and a licensed health care practitioner.

PREPARATION AND DOSAGE

There are different ways to prepare ashwagandha root, depending on which constituents are desired in the finished extract. Alcohol and water extractions can be effective in pulling out the plant's withanolides (naturally occurring steroids).

However, some of the root's constituents are fat-soluble, and in traditional Ayurvedic practice, it is prepared in mixes with some fat content, such as ghee. In fact, a heated oil-based extraction (infusing in vegetable oil or ghee) may be more effective than an alcohol-based one by allowing some constituents to pass the blood-brain barrier if delivered by nasya oil, or absorbing better from the gut into the bloodstream if taken orally.

Multifractional Extract

I use a multifractional method to create a potent alcohol and water extraction. A distillation/concentration method, such as Soxhlet extraction (see here), can help create an effective portion of the alcohol fraction, but in my experience the root requires more than heated alcohol to extract all of its constituents.

In the final product, 60 percent alcohol, 10 to 20 percent glycerin, and 30 to 40 percent water are good ranges to aim for.

Adult multifractional extract dosage: ½–1 teaspoon of 1:8 multifractional extract 1–4 times per day

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Tincture

If a multifractional extract is not possible, a simple ashwagandha tincture is still effective, and I have found alcohol (60 to 70 percent ABV) to be a good solvent, whether as a maceration or percolation tincture.

Adult tincture dosage: ½–1 teaspoon of 1:4 tincture 1–4 times per day

CAUTIONS/CONTRAINDICATIONS

Ashwagandha should generally be avoided in cases of hyperthyroidism. Otherwise, with normal dosages, there are no known contraindications. However, very high doses can cause digestive upset and should be avoided during pregnancy.

SPECIAL NOTES

Ashwagandha is a bit bitter to be taken as an infusion or decoction without some sweetener. I like to prepare it is as an adaptogenic hot cocoa drink made with the following ingredients:

- **1** cup milk
- **5** teaspoons organic cacao powder
- **1** teaspoon powdered ashwagandha
- **1** teaspoon powdered reishi
- **½** teaspoon powdered astragalus
- **½** teaspoon powdered damiana
- **⅛** teaspoon powdered cinnamon

Heat the milk. Combine the dry ingredients and stir the mixture into the hot milk. Keep stirring as you drink, making sure to drink any sludge that is left at the bottom of the cup.

Note: I often use raw milk, but coconut milk, almond milk, or any other nut milk is fine.

SOXHLET EXTRACTION

A Soxhlet extractor is an apparatus that allows for repeated extraction of dried herbal material with a hot solvent, typically ethyl alcohol (90 percent or higher ABV), and offers a way to heat the alcohol safely, which often greatly increases the results.

The extraction process involves evaporation and condensation. In a typical setup, the solvent is heated in a flask. As it evaporates, the steam collects in a condenser tube and drips into a chamber containing the dried herb. Once the herb is completely immersed and the solvent reaches a particular level, the infused solvent begins to flow back down to the heating chamber through a siphon. As the solvent refills the heating flask, it again is heated and evaporated, through several cycles of extracting the constituents.

Over the first few cycles, the solvent is typically quite dark in color. After five or six cycles, the solvent becomes paler or even nearly clear, telling us that there doesn't appear to be any more extraction from the herb. The result is a fairly concentrated alcohol tincture.

The downside of Soxhlet extraction is that a home-apothecary setup is not large enough to result in very much final product, even if that product is pretty concentrated. Additionally, you shouldn't mix the solvents; e.g., if you are running 40 percent ABV alcohol through the apparatus, the alcohol will evaporate long before the water does, diluting the final product. You need to use it with pure alcohol (or as

close as you can get) and pure water if you want to run both solvents in two separate operations.

Finally, the continuous heat increases the risk of overcooking the tincture and potentially damaging it, depending on what constituents are involved. It's possible to add a vacuum distillation to keep the temperature lower, but at that point you have to ask whether you get a comparable extraction using a far simpler method.

I tend to use Soxhlet distillation when I need a highly concentrated set of constituents that are far more alcohol than water soluble, usually to add to something like a glycerite (which usually are not as potent as alcohol extractions) that has no alcohol extraction involved. This means that with usually less than 1 percent ABV, a glycerite has the added potency of a strong alcohol extraction, even though there is little to no alcohol effect or even taste.

ASTRAGALUS

OTHER COMMON NAMES:	**BOTANICAL NAME:**	**FAMILY:**
Yellow vetch, milkvetch	*Astragalus membranaceus*	Fabaceae

Astragalus comes to the West from Chinese medicine, but this multifaceted plant can easily be grown in North America. It is a classic tonic, immune-restorative, and adaptogenic herb.

PART USED | **ROOT**

MAIN ACTIONS

- Immune restorative, adaptogenic
- Hepatoprotective, hepatostimulating
- Anti-inflammatory; supports soft tissue healing

MEDICINAL USES

Deficiency-related illness. As a gentle immune modulator, astragalus is indicated in deficiency-related illnesses, even if only as supportive care. These may include malnutrition, malabsorption, anemia, anorexia, adrenal cortex insufficiency, chronic fatigue, and convalescence-related low energy and poor appetite. It helps the body deal with all forms of hepatitis or a recovering cirrhotic liver.

Immune restorative. It helps increase macrophage response and leukocytic interferon production as well as lymphocyte rosette formation. I have used it successfully with HIV-positive clients, in combination with neem (*Azadirachta indica*), to help the body raise its own T-cell count successfully.

Healing. Astragalus greatly helps the body in the process of soft tissue wound healing, both when applied externally as well as

when taken internally. It assists through the inflammation stage as well as the tissue proliferation stage by, among other ways, upregulating endothelial nitric oxide synthase (eNOS).

PREPARATION AND DOSAGE

Astragalus is useful in a variety of formulas or even as a simple. The root can be prepared as an infusion, decoction, or tincture. Like most restorative herbs, it is fairly sweet, and I often use it in food preparations. One of my favorite methods is to use a decoction of it to cook rice. Nevertheless, the best extraction method for this herb is a multifractional one using water (50 percent), glycerin (20 percent), and alcohol (30 percent) as solvents.

Tincture

The root's most active constituents are highly water soluble, and a low-alcohol tincture (using 25 to 30 percent ABV alcohol) works fine for extraction and preservation.

Adult tincture OR MULTIFRACTIONAL EXTRACT dosage: ½–1 teaspoon of 1:4 tincture or 1:8 multifractional extract, 2 or 3 times per day

CAUTIONS/CONTRAINDICATIONS

Some say that breastfeeding mothers should avoid astragalus, but many others claim that it is not only safe during

breastfeeding but also a galactagogue. I suggest erring on the side of caution, as many other safe galactagogues are available.

There is also some confusion around the idea that astragalus should never be given during an acute infectious disease; rather, it should be used only as a preventive in healthy people. I believe this is a misinterpretation of the Traditional Chinese Medicine concept of astragalus fortifying the "wei qi" (the protective qi layer between skin and muscle that protects the body like a shield) and the idea that using astragalus can strengthen the wei qi and lock the infection in. I have used astragalus for decades, including with patients exhibiting infectious disease symptoms, and have never experienced or heard of any related clinical issues, particularly when used in formula.

BACOPA

OTHER COMMON NAMES:	**BOTANICAL NAME:**	**FAMILY:**
Water hyssop, brahmi	*Bacopa monnieri*	Plantaginaceae

Bacopa is best known in the West for enhancing cognitive function. This herb loves to grow in wet areas; unless you have a pond or other natural wetlands, you might find it easiest to grow in a container.

PARTS USED | **AERIAL PARTS**

MAIN ACTIONS

- Neurosupportive, neuroprotective
- Nervine

MEDICINAL USES

I use bacopa in a number of formulas, mostly related to neurological function.

Cognitive function. By itself, bacopa has been found to increase cognitive function, which may have a wide array of applications for age-related decline in memory and cognition. It also appears to be neuroprotective and useful in formulas related to minor nerve damage, whether trauma or illness related.

Nervous disorders. This herb goes well in nervine formulas, such as combinations with skullcap (*Scutellaria lateriflora*), wood betony (*Stachys officinalis*), and gotu kola (*Centella asiatica*), to help calm a person, especially someone dealing with depression related to addiction withdrawal, life stress, or PTSD.

It can also be combined with more activating herbs, such as Japanese dogwood (*Cornus officinalis*), Chinese black cardamom (*Alpinia oxyphylla*), gotu kola (*Centella asiatica*), ginseng (*Panax* spp.), and eleuthero (*Eleutherococcus senticosus*), to create an adaptogenic formula for people dealing with stress and inability to focus or concentrate.

Acute mountain sickness. Adding ginger (*Zingiber officinale*), prickly ash (*Zanthoxylum* spp.), and algerita (*Berberis trifoliolata*) leaf to the above adaptogenic formula makes a useful formula for distress in response to ascents to higher altitude.

Thyroid support. Bacopa may have a supportive effect on thyroid function as well. The trick is in making sure that the herbal constituents make it into the bloodstream and across the blood-brain barrier. Taking a tincture orally often does not yield high bioavailability for herbal constituents. Nasya oil can be a better method of administration. Sublingual and nebulizer administration may also be useful here.

PREPARATION AND DOSAGE

Nasya Oil

An oil infused with bacopa, whether using fresh or dried herb, is effective as a nasya oil, massaged into the nasal membranes.

Adult nasya oil dosage: 3 or 4 drops per nostril, 2–4 times per day

Tincture

Fresh or dried bacopa can be tinctured in 50 to 60 percent ABV alcohol. With dried material, I find it more effective, but not

absolutely necessary, to make a two-stage multifractional preparation—first a decoction, with enough glycerin added to make up 20 percent of the final extract's volume, and then an alcohol (95 percent ABV) percolation with the marc. The final ABV should be between 30 and 40 percent.

Note that bacopa is more bioavailable when taken with a meal that includes some fat. Some of the active constituents require lipid transporters to be absorbed into the bloodstream from the gut. In Ayurvedic medicine, it is traditionally taken with ghee.

Adult tincture dosage: ½–1 teaspoon of 1:4 tincture, 1–5 times per day

CAUTIONS/CONTRAINDICATIONS

Bacopa may cause indigestion if taken on an empty stomach. It is best taken in formula rather than as a simple, and it should be discontinued if it causes gastrointestinal distress, diarrhea, bloating, or other negative side effects.

BAIKAL SKULLCAP

BOTANICAL NAME:	**FAMILY:**
Scutellaria baicalensis	Lamiaceae

Baikal skullcap, which comes to us from Chinese medicine, is an extremely effective and useful herb with strong antibacterial properties from one of its primary constituents, baicalin, which prevents bacteria from being able to form biofilms (see Special Notes).

PART USED | **ROOT**

MAIN ACTIONS

- Antibacterial, anti-infective
- Anti-inflammatory

MEDICINAL USES

Bacterial infection. I have used Baikal skullcap extensively and with extremely positive results in treating bacterial infections. It is particularly potent in treating both chronic and acute infections that are likely to involve bacterial biofilms as well as antibiotic-resistant bacteria. This includes infections of the skin, wounds, urinary tract, upper and lower respiratory tract, and gut (e.g., *Clostridium difficile*).

Adding Dahurian angelica (*Angelica dahurica*) to a formula with Baikal skullcap likely increases both the amount of baicalin that is absorbed from the gut into the bloodstream as well as the amount of baicalin that remains bioavailable after entering the bloodstream.

Anti-inflammatory. Baikal skullcap works well with devil's claw (*Harpagophytum procumbens*) and ox knee (*Achyranthes bidentata*) to reduce inflammation. Its baicalin content may play a role.

Neuroprotective. Consider Baikal skullcap in formulas for attention deficit disorders; its constituent oroxylin may play a role in this use. Other herbs I like to use with Baikal skullcap for this purpose are rosemary (*Rosmarinus officinalis*), gotu kola (*Centella asiatica*), and skullcap (*Scutellaria lateriflora*) leaf. It is likely that the leaf of Baikal skullcap would also be useful in a neuroprotective formula.

SPECIAL NOTES

I began using Baikal skullcap root for its anti-infective properties, which derive mainly due to the constituent baicalin. Baicalin is available in other species of skullcap (see Skullcap). In fact, *Scutellaria lateriflora* root may contain higher amounts of baicalin than its cousin *S. baicalensis*. However, unless you grow or wildcraft *S. lateriflora,* you will probably not be able to find the root of that species online or in an herb store because it is not used in Western medicine. Instead, Western herbalism normally uses the leaf of *S. lateriflora*.

The use of *S. baicalensis* root comes to us from Traditional Chinese Medicine (TCM), and normally you will not find any TCM practitioner using the leaf of this plant. Thanks to these converse traditions, we end up using *S. baicalensis* when we need skullcap root and *S. lateriflora* when we need skullcap leaf,

even though we could probably use both the leaf and the root from both plants, as well as other species of the *Scutellaria* genus.

PREPARATION AND DOSAGE

Baicalin is not very water soluble but is highly soluble in alcohol. For this reason, I normally extract the dried root in 80-plus percent ABV alcohol, specifically for the baicalin content. Other constituents in this plant are water soluble, however, so if you have the time to extract your medicine using multifractional techniques, you will get the best results for purposes besides the baicalin-focused ones.

Adult tincture dosage: ½–1 teaspoon of 1:3 tincture, 2–5 times per day

CAUTIONS/CONTRAINDICATIONS

None known when used in the dosages given and in moderation.

BEE BALM

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
	Monarda spp.	Lamiaceae

Monarda, horsemint, bergamot		

Bee balm is an amazing medicinal plant in the mint family with numerous applications, especially for the respiratory system.

PARTS USED | **AERIAL PARTS**

MAIN ACTIONS

- Anti-infective, antibacterial, antiviral
- Digestive support

MEDICINAL USES

Upper respiratory support. Bee balm is most commonly used as an anti-infectious herb for the upper respiratory system. It works well against viral as well as bacterial infections of the sinuses, the nasopharynx, the oropharynx, the inside of the mouth, and even the middle and lower airway (e.g., in the case of bronchitis), especially in terms of breaking up mucus.

Colds and flu. At the onset of a cold or flu, when you feel run down, with congestion or irritation behind your nose or in the back of your throat, and perhaps lymph swelling around the throat, with a headache or even a slight fever, this is one of my go-to herbs. I especially use it when there is sinus or nasopharynx involvement.

Carrier. Bee balm is a very good "carrier" herb, making it especially useful in formulas. I love to use it as one of the primary herbs in cold and flu formulas that also usually contain herbs like prickly ash (*Zanthoxylum* spp.), echinacea (*Echinacea* spp.), elder (*Sambucus* spp.), and boneset (*Eupatorium perfoliatum*).

Digestive issues. Like most aromatic mints, bee balm is soothing and also stimulating for digestive issues such as upset stomach (especially when it's related to anxiety), liver congestion (for which it works as a cholagogue), and dyspepsia.

Minor burns and skin infections. Bee balm is also effective externally for skin and mucous membrane infections as well as minor burns.

SPECIAL NOTES

Bee balm infusion can be used as a neti pot wash for sinus infections. Add ¼ teaspoon salt to 8 ounces of infusion in order to make it isotonic.

PREPARATION AND DOSAGE

The aerial parts (the entire plant, from a few inches above the ground upward), picked at the height of flowering, are most commonly used. Bee balm can be dried and stored for later use as an infusion, or it can be tinctured, whether dried or fresh.

I tincture fresh bee balm in 40 percent ABV alcohol for a potent extraction. I have done percolation tinctures (also in 40 percent ABV alcohol) of the dried herb with good results, but I believe the fresh herb makes the strongest tincture.

Adult tincture dosage: ½–1 teaspoon of 1:2 tincture, 2–5 times per day

CAUTIONS/CONTRAINDICATIONS

Use bee balm with caution during pregnancy.

BILBERRY

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
blueberry, huckleberry, trackleberry, whinberry, whortleberry	*Vaccinium myrtillus*	Ericaceae

A huge diversity of highly effective uses makes both the leaf and berry a must-have in every materia medica. The best quality berries tend to come from northern climates such as Canada and northern Europe.

PARTS USED | **BERRY, LEAF**

MAIN ACTIONS

- Antimicrobial, antibacterial
- Aids circulation, assists wound healing

MEDICINAL USES

UTI treatment. This is a two-for-one herb. Bilberry berry contains the same type of proanthocyanidins (type A) found in cranberries. They prevent certain types of bacteria (such as *Escherichia coli*, the most common causative bacteria in UTIs) from colonizing in the urinary tract. Bilberry leaf contains hydroquinone, an anti-infective that is eliminated through the urinary tract.

The leaf and berry together are also an excellent antibacterial specifically for *Enterococcus faecalis* infections of the urinary tract. *E. faecalis* is a common culprit in chronic UTIs. Since bilberry leaf may not have potent biofilm inhibition properties, any formula using it for treating a chronic UTI should also include biofilm-busting herbs to greatly increase the overall effect of the formula.

Increasing circulation. The berries, which can be taken long term, help improve the integrity of blood vessels and distal circulation, which are both valuable aspects in the body's ability to deal with the effects of diabetes. The berries contain a high

level of antioxidants, which also helps maintain blood vessel health. Both the berries and the leaves are useful in lowering hypertension.

Wound healing. One of the most important uses of bilberry is the ability of (primarily) the leaf to improve circulation to a wound, as well as to decongest congealed, stagnant blood. For this reason, bilberry leaves are useful for short-term management of varicose veins. The leaves can be used externally (as a poultice or salve) or internally, especially during the inflammation and proliferative stages of wound healing. The high levels of antioxidants in the berries (and leaves) are also extremely useful in keeping the area around the healing wound cleaner and improving the microcirculation needed for rapid healing and lowering the risk of infection.

SPECIAL NOTES

Eyes. I first started using bilberry berries more than 25 years ago to help improve my night vision and was very impressed with the results. The effect may be in part due to the constituent myrtillin. Some of the physiological mechanisms of action that make bilberry helpful for improving night vision are the same processes that make it such a powerful tissue healer and connective tissue astringent and tonifier. The connective tissue toning combined with the improvement in circulation make bilberry a useful herb to consider for a glaucoma protocol.

Blood sugar. Bilberry leaf has the ability to lower blood sugar. However, the physiology of this process impairs an otherwise

normal process in the liver, so it is not considered a valid long-term method for lowering blood sugar.

PREPARATION AND DOSAGE

Harvest the leaves before the berries have ripened fully for maximum myrtillin content. Harvest the berries when they are ripe. I normally use the leaves in a formula rather than as a simple.

The leaves and berries can be infused, decocted, or tinctured.

Tincture

Fresh or dried leaves and berries can be tinctured in about 40 percent ABV alcohol. For the most effective tincture, specifically for use in a UTI formula, use dried berries, and tincture them as soon as possible after drying them.

Adult tincture dosage: ½–1 teaspoon of 1:4 tincture, 2 or 3 times per day

CAUTIONS/CONTRAINDICATIONS

Use bilberry leaf in a formula rather than as a simple. Bilberry leaf should not be taken more than 3 weeks at a time before taking a break for at least a few weeks. The berry can be taken indefinitely.

BIRCH

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Downy birch	*Betula* spp. (including *B. alba*, *B. lenta*, and *B. pubescens*)	Betulaceae

Birch has many actions, including on the urinary tract and digestion. It is particularly useful for healing soft tissue injuries. Probably all the *Betula* species can be used synonymously.

PARTS USED | **BARK, LEAF, BUD, SAP**

MAIN ACTIONS

- Aquaretic, diaphoretic
- Anti-inflammatory
- Cholagogue (stimulates digestion)

MEDICINAL USES

Urinary tract. All parts of the plant are used for urinary tract issues. As a potent anti-inflammatory (salicylic acid at a minimum would be partially responsible for this) and aquaretic, birch is an effective herb in UTI formulas. It is also useful in combination with smooth muscle relaxants to treat kidney stones.

Detoxification and elimination. As well as stimulating digestion, birch is a decent diaphoretic, stimulating elimination through the skin. The bud possibly more than the leaf and bark is also a lymphagogue. The combination of lymph, liver, and kidney detoxification makes birch a good herb for a lymph/immune type formula, and a general herb to stimulate detoxification through the skin and kidneys prior to or at the onset of illness.

Wound and soft tissue healing. It is extremely useful for healing both closed and open wounds. Birch bark (primarily the outer bark) contains high amounts of betulin, which has been studied for a number of possible uses, from cancer treatment (cancer cell apoptosis) to possible anti-HIV effects to better wound healing during both the inflammatory and the proliferative stages.

Birch species also contain methyl salicylate, which is similar in structure and effect to aspirin, making birch very effective in helping the body deal with the pain and inflammation of a soft tissue injury (such as a sprain, strain, or bruise) as well as lacerations and tissue repair at the wound site. It is useful both as a wound powder (for poultices) and as a salve.

PREPARATION AND DOSAGE

The outer bark is most commonly used, but the leaf, the bud, and even the sap can also be used interchangeably in preparation and application.

Infusion and Decoction

Infuse or decoct the leaf and bark together, combined with a pinch of baking soda (bicarbonate) per cup of water to help draw out more betulin and increase the effectiveness of the preparation. A cold infusion is generally a stronger aquaretic, while a hot infusion is a stronger diaphoretic. Give 1 or 2 cups of infusion or decoction per day for a typical adult dose.

Tincture and Multifractional Extract

Tincture the bark, the leaf, the sap, or any combination thereof, fresh or dried, in 60 to 80 percent ABV alcohol. You can also prepare birch as a multifractional extract, using water (with baking soda), glycerin, and alcohol as solvents.

Adult tincture or multifractional extract dosage: ½–1 teaspoon of 1:4 tincture or 1:8 multifractional extract, 2 or 3 times per day

CAUTIONS/CONTRAINDICATIONS

I do not know of any contraindications for birch, whether it's used internally or externally. However, I would not use it internally for more than 3 weeks at a time.

BLACK WALNUT

BOTANICAL NAME:	**FAMILY:**
Juglans spp. (especially *J. nigra*)	Juglandaceae

This low- to medium-toxicity herb is effective against bacterial and fungal infection and useful for wound healing. It is also useful in improving liver function.

PARTS USED | **HULL, LEAF, BARK**

MAIN ACTIONS

- Antifungal, antibacterial, antiviral
- Anthelmintic
- Bitter; hepatosupportive, hepatostimulating

- Wound healing

MEDICINAL USES

Infections. Internally, I use black walnut in formulas for fungal, bacterial, helminthic, and sometimes even viral infections. Upper airway infections like strep throat and gut infections like candidiasis or small intestinal bacterial overgrowth (SIBO) respond well to black walnut. It should also be included in any antiparasitic formula.

Externally, black walnut is useful for fungal infections and wound healing. The hull, leaf, and bark can all be applied as a poultice or plaster for this purpose. Black walnut is very useful in treating ringworm, though note that it will stain the skin black. Speaking of which, it makes an excellent formula for foot or toenail fungus, together with red henna (*Lawsonia inermis*) and neem (*Azadirachta indica*), all finely powdered and mixed with lemon juice, then painted onto foot and/or toenail fungus and reapplied as needed for several days.

Wound healing. Walnut leaf is a critical component in my wound-healing powders. Combined with chaparral (*Larrea* spp.), plantain (*Plantago* spp.), and yarrow (*Achillea millefolium*), it makes an effective anti-infective wound healer to apply as a poultice or even a plaster.

Liver function. Black walnut has a bitter effect and is a liver decongestant, stimulating the quality and quantity of bile and helping improve liver function. It can be particularly useful in

liver-decongesting formulas when chronic constipation is also an issue.

SPECIAL NOTES

Because it contains selenium and iodine, black walnut is often used as a support herb for thyroid issues along with herbs like ashwagandha (*Withania somnifera*), eleuthero (*Eleutherococcus senticosus*), and chickweed (*Stellaria media*). Though it can be effective for this purpose, I have found other thyroid formulas to be more consistently useful.

PREPARATION AND DOSAGE

Juglone is considered black walnut's most highly medicinal constituent. It is soluble in alcohol but poorly soluble in water. For medicinal applications, the hull (harvested while still green) and leaf are most commonly used, although the bark can be used as well.

Though either the hull or the leaf will work well by itself, I prefer the effects when they are used together, in a 1:1 ratio of leaf to hull as a tincture. The tinctures can be made independently (e.g., in a percolation tincture) and combined, or the hull and leaf can be combined in a maceration tincture and extracted together.

An ABV of 50 to 70 percent works well for alcohol extraction.

Adult tincture dosage: ½–1 teaspoon of 1:3 tincture, 2 or 3 times per day

CAUTIONS/CONTRAINDICATIONS

Avoid internal use of walnut during pregnancy and while breastfeeding. When taken internally, it should be always be part of a formula and taken for no more than 2 to 3 weeks before a break for an equivalent amount of time.

BONESET

OTHER COMMON NAMES:	**BOTANICAL NAME:**	**FAMILY:**
Thoroughwort, feverwort	*Eupatorium perfoliatum*	Asteraceae

A superb diaphoretic (opening the channels of elimination through the skin), boneset probably gets its name from its use in treating dengue fever, a.k.a. “breakbone fever.” It is especially helpful at the onset of a cold or flu, as it is an immune booster and a decent respiratory support herb.

PARTS USED | **LEAF, FLOWER**

MAIN ACTIONS

- Diaphoretic
- Immune booster
- Bitter; hepatosupportive

MEDICINAL USES

Diaphoretics play a crucial role in preventing illness, especially when taken at the onset of a viral or other infection. Boneset is definitely one of the better North American herbs in fulfilling this role. With additional benefits in lymph and immune stimulation, it can help pull the body back into balance in the case of a viral or even bacterial infection of the upper respiratory system.

Colds and flu. I use boneset first and foremost as a diaphoretic in the herbal sense, meaning that it opens the channels of elimination through the skin and promotes sweating. It also increases white blood cell count and the activity of macrophages and neutrophils to a degree that is comparable to echinacea (*Echinacea* spp.). And it is a decent respiratory herb that helps calm spasmodic coughing. These properties come together to make boneset very effective for treating colds and the flu.

Digestive issues. As a bitter and liver decongestant, boneset can help with issues related to liver congestion, if a short-term approach is necessary.

PREPARATION AND DOSAGE

Use boneset only in a formula, as it can be somewhat toxic if taken by itself in large amounts over a long period of time. (Though it does not typically require dosage over a long period of time.)

The leaves and flowers—both harvested while the flowers are in bloom— should be dried before being used; drying may help neutralize some of the more toxic constituents. The dried material can be infused, decocted, or tinctured in about 40 percent ABV alcohol.

Both hot infusion and tincturing will increase the herb's diaphoretic properties.

Adult tincture dosage: ½–1 teaspoon of 1:4 tincture, 3 or 4 times per day

CAUTIONS/CONTRAINDICATIONS

Use boneset in a formula rather than by itself and limit its use (even in a formula) to no more than 3 weeks, followed by at least a 3-week break.

BUGLEWEED

BOTANICAL NAME:	**FAMILY:**
Lycopus spp. (including *L. americanus* and *L. virginicus*)	Lamiaceae

Bugleweed is particularly useful for the cardiovascular system, acting in many ways as a cardiac nervine.

PARTS USED | **AERIAL PARTS**

MAIN ACTIONS

- Cardiovascular support
- Nervine

MEDICINAL USES

Cardiac support. Bugleweed can be helpful for both hypertension and elevated heart rate (tachycardia), especially when caused by anxiety, as well as angina and other stress-related chest pain or pressure. It increases the contractile strength of the heart and can be useful for cardiovascular insufficiency. It can also directly benefit cases of congestive heart failure, edema, and poor circulation related to heart health.

Obviously, bugleweed is not a remedy for a heart attack or even angina, but it can be supportive for someone who is highly stressed and has a tendency toward high blood pressure, and for anyone suffering from angina or even chest pain that might be related to reflux.

Respiratory therapy. As a nervine for the lungs and respiratory system, bugleweed can be used as a relaxing expectorant and bronchodilator for conditions ranging from chronic issues like asthma to an acute dry cough from an upper respiratory infection.

Other uses. Bugleweed is a decent bitter and has a soothing effect for indigestion. I have used it successfully in formulas

together with chaste tree (*Vitex agnus-castus*) berry for menopausal hot flashes and night sweats.

It is fairly astringent and could conceivably be used to help deal with diarrhea or in a hemostatic formula for external or internal bleeding with a styptic herb like Canadian fleabane (*Erigeron canadensis*).

SPECIAL NOTES

Controversy continues over whether bugleweed has a thyroid-inhibiting effect. I have seen this effect clinically many times with clients who were experiencing hyperthyroid issues, and for that reason, I suggest avoiding bugleweed in cases of hypothyroidism. Alternatively, it can be considered for formulas meant to help with chronic hyperthyroid issues — in conjunction with a complete wellness plan that includes lifestyle, nutrition, stress management, and preferably working in coordination with a licensed health care practitioner to monitor results.

PREPARATION AND DOSAGE

The aerial parts of bugleweed can be tinctured fresh or dried; the best time to harvest them is when the plant is starting to flower. Anywhere from 40 to 60 percent ABV alcohol will create a decent medicinal product.

Adult tincture dosage: ½–1 teaspoon of 1:3 tincture, 2–4 times per day

CAUTIONS/CONTRAINDICATIONS

Avoid bugleweed in cases of hypothyroidism. It can inhibit prolactin and gonadotropin, so avoid it during pregnancy or while breastfeeding.

BURDOCK

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Fox's clote, thorny burr, beggar's	*Arctium lappa*	Asteraceae

buttons, cockle buttons, burrseed		

Burdock is a classic liver decongestant and has been one of the primary ingredients in most detoxification formulas for the consumer herbalism market for the past 40 years.

PARTS USED | **ROOT, LEAF, SEED**

MAIN ACTIONS

- Detoxifier
- Hepatoprotective, hepatosupportive
- Aquaretic, diaphoretic
- Wound healer (leaf)
- Mild lymph mover

MEDICINAL USES

Unlike some of the other mass-market herbal medicine that has been terribly misused, burdock root and seed actually fit well in the "detox" category of herbs. They clear toxicity from the liver and lymph with gentle hepatoprotective and hepatostimulant properties, while also being effective aquaretics.

Recovery from toxins. Burdock can help the body recover from food poisoning, chemical poisoning, radiation poisoning, insect or animal venom, poisonous plants, and other toxins. In this regard, it is best used in conjunction with a strong

hepatoprotective herb, such as milk thistle (*Silybum marianum*) or plantain (*Plantago* spp.).

Skin disorders and allergies. Burdock can help normalize the digestive and liver imbalances that often lead to skin disorders and chronic inflammatory conditions like eczema, rosacea, and psoriasis.

Urogenital issues. It can be used in formula to help normalize dysmenorrhea in women. It also works as a mild vulnerary for the genitourinary tract, making it useful in formulas for UTIs and incontinence related to conditions causing inflammation or irritation, such as benign prostatic hypertrophy (BPH).

Tissue healing. Burdock leaf is a decent tissue healer for lacerations, minor burns, and open wounds. It has been used by midwives through the centuries in postpartum sitz baths.

PREPARATION AND DOSAGE

Traditional Chinese Medicine uses burdock seed, which in my opinion is more potent than the root. I like to combine them in a 1:1 ratio. Burdock root and seed, fresh or dried, can be prepared as an infusion, decoction, tincture (in about 40 percent ABV alcohol), capsule (of the powdered dried herb), syrup, infused oil or salve, poultice, or plaster. Burdock leaf can be used in poultices and infused into honeys and oils/salves for tissue trauma and burns.

Adult tincture dosage: ½–1 teaspoon of 1:4 tincture, 2 or 3 times per day

CAUTIONS/CONTRAINDICATIONS

Burdock is a gentle uterine stimulant and should be used with caution during the first trimester of pregnancy.

BUTTERBUR

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Bog rhubarb, devil's hat, pestilence wort	*Petasites hybridus*	Asteraceae

Butterbur is a heating, eliminative herb, similar to ginger (*Zingiber officinale*), which makes it a great cold and flu herb that promotes expectoration. It is also helpful in working with inflammation and allergies.

PARTS USED | **ROOT, LEAF**

MAIN ACTIONS

- Diminishes allergic reaction
- Anti-inflammatory

- Aquaretic, diaphoretic
- Emmenagogue

MEDICINAL USES

Allergies. Butterbur root contains at least one leukotriene-inhibiting constituent that diminishes allergic and inflammatory responses with great success, especially in the respiratory tract. It can be delivered orally or through steam or nebulizer inhalation. It also makes an effective neti pot rinse for chronic allergies and recurring sinus infections that correlate to seasonal allergies. I usually combine it with nettle (*Urtica dioica*) leaf, chameleon plant (*Houttuynia cordata*), and licorice (*Glycyrrhiza glabra*) root for this purpose.

Wound healing. Butterbur reduces inflammation and promotes tissue healing through its diaphoretic (vasodilatory) effects. I also use it topically as an anti-inflammatory for sprains and strains.

PREPARATION AND DOSAGE

Butterbur root, fresh or dried, can be prepared as an infusion or decoction (an adult can drink 1 to 2 cups per day), but I prefer a tincture. Butterbur leaves are usually used externally as a poultice for wound healing; the root can be used in this way as well.

Tincture

Tincturing the fresh or dried root is an effective method of extraction. Historically, butterbur tincture was made with vinegar; I prefer to use alcohol (about 70 percent ABV) because it keeps longer.

Adult tincture dosage: ½–1 teaspoon of 1:4 tincture, 1–4 times per day

CAUTIONS/CONTRAINDICATIONS

Butterbur is a medium-toxicity herb that shouldn't be used internally for more than 3 to 4 weeks without a break of equal length. The roots in particular contain at least trace amounts of pyrrolizidine alkaloids (see here).

Additionally, I always use butterbur in formula (whether topical or internal) and usually include licorice in that formula. Licorice is an excellent synergistic herb for the type of respiratory inflammation that butterbur is so effective for, while also possibly mitigating liver toxicity that may occur when using any herb with pyrrolizidine alkaloids.

Externally, it can be used for much longer, but if you are not achieving results within a few weeks, then it is probably time to move on to a different herb.

Butterbur should not be used during pregnancy due to its emmenagogue properties.

CALENDULA

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Marigold, gold bloom, pot marigold	*Calendula officinalis*	Asteraceae

Given its history of use for simple first aid (cuts, abrasions, and burns), it is easy to overlook the medicinal complexity of this herb. Nevertheless, this plant has a plethora of uses and belongs in every materia medica.

PART USED | **FLOWER**

MAIN ACTIONS

- Wound and tissue healer
- Immune and lymph stimulation and support
- Eliminative (diaphoretic, diuretic)
- Female reproductive support and tonification
- Antifungal

MEDICINAL USES

Calendula's wide variety of uses is indicative of its range of constituents and their solubility. This herb can differ in effect depending on whether it is extracted in water, alcohol, glycerin, oil, or another solvent.

Wound and tissue healing. This herb is incredibly effective as a tissue healer, particularly for minor burns. Honey is the best base for this purpose. For minor burns, skin rashes, and abrasions, washes, soaks, oils, and salves are also effective. Poulticing can be a good way to apply calendula, but I prefer to include stronger anti-infective herbs when using it for anything beyond minor wounds because, thanks to its excellent encouragement of tissue proliferation, it can cause deeper wounds to close up so quickly that any infection is trapped inside.

Fungal infections. For skin fungal infections such as ringworm, calendula works best in formula applied topically as a liniment or high ABV tincture, though it can also be effective as a poultice, an alcohol salve, or a salve.

Eye injuries and infections. Calendula also works well as an eyewash for eye infections or minor trauma, such as a corneal abrasion.

Lymph and immune support. A high-ABV alcohol extraction of calendula flowers can be taken internally to help support the immune system and stimulate lymph movement. It is best used in formula with other lymph-moving herbs such as poke (*Phytolacca americana*), red clover (*Trifolium pratense*), and cleavers (*Galium aparine*).

Colds and flu. Calendula's eliminative qualities are brought to the forefront in higher-ABV alcohol extractions, and it works well for fighting off colds and the flu when used with other diaphoretic herbs like yarrow (*Achillea millefolium*), elder

(*Sambucus* spp.), ginger (*Zingiber officinale*), and boneset (*Eupatorium perfoliatum*) in this way.

Circulation support. Calendula works well to support blood circulation internally and in particular to help tone venous circulation. It is effective as an internal (and topical) protocol for varicose veins, and with its wound healing and astringent qualities, it can also be useful for internal bleeding or congestion, including stomach ulcers, liver congestion, and even fatty cysts.

Female reproductive support. This herb can help regulate menstruation, normalize reproductive hormone levels, and relieve spasmodic dysmenorrhea. As a uterine stimulant, it can also help with difficult labor.

PREPARATION AND DOSAGE

You can choose your extraction method based on your primary usage, but the best method I have found is a multifractional extraction, since it covers a wide range of solubilities for calendula's constituents. You can keep it simple with water, glycerin, and alcohol, but I like to use apple cider vinegar (initial soak) and honey (added to the decoction or infused separately) as part of the extraction process for internal usage. For external usage, an alcohol salve or oil is my first choice.

For a straight tincture, I like to prepare a high-alcohol (80-plus percent ABV) extraction and a low-alcohol (25 to 30 percent ABV) extraction separately and then blend them. High ABV tinctures have more of an antimicrobial and anti-infective

action, while low ABV tinctures are more effective for circulation, female reproductive concerns, tissue healing, and eye injuries. The extractions can be percolations or macerations of the fresh or dried plant. If any precipitation is present, add about 10 percent glycerin to stabilize the mixture.

Adult tincture or multifractional extract dosage: ½–1 teaspoon of 1:4 tincture, 3 or 4 times per day

CAUTIONS/CONTRAINDICATIONS

Calendula should not be used internally during pregnancy due to its uterine stimulant properties.

CALIFORNIA POPPY

BOTANICAL NAME:	FAMILY:
Eschscholzia californica	Papaveraceae

California poppy is most useful for calming anxiety and inducing sleep.

PARTS USED | **WHOLE PLANT**

MAIN ACTIONS

- Soporific, anesthetic
- Analgesic

MEDICINAL USES

Like many other poppies, California poppy contains sanguinarine, protopine, and other alkaloids. This plant is well known for its analgesic, anesthetic, and soporific effects. Though California poppy has nowhere near the potency of opium poppy (nor should it present a problem in a typical urine drug test looking for opioids), it can nonetheless help sedate a person in a state of pain or high anxiety. I like to combine this plant with prickly poppy (*Argemone* spp.) in formulas to help with pain, anxiety, and insomnia.

Most commonly, I use this plant to help people get to sleep. However, it is also useful as a nervine in lowering anxiety and panic types of responses to an injury (like shock).

PREPARATION AND TINCTURE DOSAGE

Harvest at least the aboveground parts of the plant (use the roots, too, for stronger effects) when the poppy is in full flower. Create a 1:1 fresh tincture by stuffing as much plant into a blender as possible, continually blending and breaking down the plant to make more room, while mixing in about 60 percent ABV alcohol. Make the thickest slurry you can of the herb and alcohol, blending it as finely as possible. Treat this mixture like any maceration tincture and strain after 2 to 3 weeks.

California poppy can also be tinctured as a dried plant, in which case I prefer a percolation tincture in 50 percent ABV alcohol.

Adult tincture dosage: ½–1 teaspoon of 1:1 (or as close as possible) tincture, 1–4 times per day

CAUTIONS/CONTRAINDICATIONS

Use poppy with caution during pregnancy. Lactating mothers should also use it with caution, as it may dry up milk. This herb should not be given to anyone with glaucoma due to the possible exacerbating effects of sanguinarine.

CHAMELEON PLANT

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Bishop's weed, fish mint, yu xing cao	*Houttuynia cordata*	Saururaceae

Chameleon plant is native to Asia but has been introduced into the United States, particularly along the East Coast, as an ornamental. There is some worry that this perennial will become an invasive species. However, it has vast medicinal qualities. As is the case with kudzu and Japanese knotweed, we should be harvesting and

using these nonnative species for the incredible medicine they give us.

PARTS USED | **AERIAL PARTS**

MAIN ACTIONS

- Anti-inflammatory, especially for the respiratory tract
- Antiviral effects for various respiratory viruses (possibly including SARS) and herpes
- Respiratory support

MEDICINAL USES

Respiratory tract. I primarily use this herb for upper and lower respiratory conditions, particularly where there may be inflammation: acute flare-ups of chronic asthma, viral upper respiratory infections, seasonal allergies, sinus infections related to allergies or viral infections, and so on.

I also use it with one or more respiratory anti-inflammatory herbs like lobelia (*Lobelia inflata*), gumweed (*Grindelia* spp.), silk tassel (*Garrya* spp.), butterbur (*Petasites hybridus*), nettle (*Urtica dioica*) leaf, licorice (*Glycyrrhiza glabra*) root, and ma huang (*Ephedra sinica*) as a formula for mild to severe respiratory allergies or even anaphylaxis. Of course, it is not meant to be a substitute for an EpiPen for anaphylaxis, but when no epinephrine is available, a sublingual dosage of this formula can be effective. It gives both immediate and lasting relief, similar to Benadryl, but without side effects such as drowsiness.

Chameleon plant plays a major role in any such formula as a mast cell inhibitor.

Chameleon plant is useful for sinus inflammation and infection, whether that condition arises from allergies, viral infection, or even bacterial infection. Administration in this case is best done intranasally by neti pot or nasal atomization.

Urinary tract. This herb reduces inflammation in the epithelial tissue of the urinary tract while at the same time increasing the flow of urine, which can ease the pain and discomfort associated with a UTI, assist the body in overcoming infection, and help flush the area.

Digestive tract. Chameleon plant is a useful anti-infective herb for viral and at least one bacterial (salmonella) infection of the gut. It also calms inflammation in the gut, which may contribute to recovery from infectious gastroenteritis.

Additionally, chameleon plant helps lower blood glucose levels and reduce digestive tract inflammation that accompanies a damaged or disturbed gut microbiome, hyperinsulinemia, and eventual type 2 diabetes.

Skin allergies. Prepared as an oil, wash, or lotion and applied topically, chameleon plant can provide symptomatic relief for both contact and atopic dermatitis (e.g., eczema).

SPECIAL NOTES

Based on research indicating that chameleon plant may have an inhibitory effect on the SARS virus, which is a type of coronavirus, I started using it for clients with COVID-19 and found it to be very useful for controlling respiratory inflammation.

PREPARATION AND DOSAGE

The dried aerial parts of the plant can be tinctured (preferably as a percolation) in 40 percent ABV alcohol. The fresh aerial parts can be macerated in 50 percent ABV alcohol. Both fresh and dried plant material can also be extracted into a glycerite. Chameleon plant can be prepared as an infusion or decoction but for internal administration, I prefer to make a multifractional extract including water, glycerin, and alcohol.

For external use, it can be infused into an oil or salve.

Adult tincture dosage: ½–1 teaspoon of 1:4 tincture, 3 or 4 times per day

CAUTIONS/CONTRAINDICATIONS

None known.

CHAMOMILE

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
German chamomile, scented mayweed	*Matricaria recutita*	Asteraceae

Chamomile's diversity of uses makes it valuable for minor first aid around the home. This herb is well loved by herbalists because it provides a huge spectrum of symptomatic relief.

PART USED | **FLOWER**

MAIN ACTIONS

- Sedative
- Nervine, anxiolytic
- Anti-inflammatory, analgesic

MEDICINAL USES

Chamomile has many effects, including anti-inflammatory, sedative, anti-anxiety, expectorant, carminative, diaphoretic, and tissue proliferative ones; it is a nervine, offers mild pain relief, and even harmonizes menstruation. So it can benefit a lot of different health conditions, depending on the part of the body you are working with. You might, for example, use it to relieve upset stomach (especially in children), teething pain (applied topically to the gums), anxiety, insomnia, cramping pain, upper respiratory tract infection, or a fever from the flu.

I tend to use chamomile primarily in situations calling for pain relief that is also soothing and calming, whether for the

nervous system, digestive system, or respiratory system. It falls low on the toxicity spectrum, so unless a person has an allergic reaction to it, chamomile can be used (especially in formulas) for longer periods of time, even several months.

Eye issues. It is a soothing, mild herb to use in a poultice for tired eyes, minor eye injuries, and sties and other minor eye infections. Chamomile infusion or decoction can be applied as a soaked teabag or poultice on the closed eyelid or as an eyewash.

Skin irritation. A cooling poultice of chamomile can relieve minor abrasions, mild burns and sunburn, rosacea, and skin irritation arising from a variety of conditions, including minor poison ivy and poison oak outbreaks.

PREPARATION AND DOSAGE

For internal use, prepare chamomile flower, fresh or dried, as a tincture (about 80 percent ABV alcohol) or decoction. Fresh-flower preparations are considered more potent than those made from dried flowers, but a dried-flower percolation tincture is still very strong. A Soxhlet extraction (see here) of dried chamomile is also extremely concentrated, as chamomile is particularly well suited to this method.

Higher-ABV alcohol extractions of chamomile tend to yield stronger medicinal concentrations that work well for pain and internal inflammation, while water-based extractions create milder medicine that's better suited for stress, irritability, insomnia, digestive upset and nausea, and minor skin inflammation.

For topical applications, poultices and/or compresses (made with a decoction or infusion) work well. Chamomile makes an amazing essential oil and hydrosol that can be used effectively in salves and lotions.

Adult tincture dosage: ½–1 teaspoon of 1:4 tincture, 1–3 times per day

CAUTIONS/CONTRAINDICATIONS

Use chamomile with caution during pregnancy, especially if you are using it as a simple, as it is a uterine stimulant. Pregnant women should limit their intake of chamomile tea to 1 cup per day. Occasionally, a person can have a mild allergy to chamomile.

CHAPARRAL

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Creosote bush, greasewood, hediondilla	*Larrea tridentata*	Zygophyllaceae

I'd have a hard time doing without this amazing shrub. Chaparral speeds tissue regrowth while preventing infection and inflammation. It's extremely effective for healing wounds and restoring health to tissue.

PARTS USED | **AERIAL PARTS**

MAIN ACTIONS

- Antimicrobial
- Anti-inflammatory
- Tissue proliferative
- Antiviral, particularly for herpes viruses

MEDICINAL USES

I use this plant externally far more than internally. Whether as a poultice, wound powder, salve, or even a tincture applied directly on a wound, it offers many benefits.

Wounds. I consider chaparral a primary ingredient in any wound powder formula or antibacterial wound-healing salve or oil. (Though I would not necessarily recommend this approach, in the absence of a wound powder formula, I have also used chaparral powder alone to pack deep lacerations.) It is very drying, and I have found that using the tincture directly on diabetic ulcers greatly improves their ability to heal. I have also used it in formula, externally, to heal a brown recluse spider bite that was causing nerve pain. The results were felt within minutes, with the pain diminishing to almost nothing.

Burns. As an infusion administered as a cool/cold wash or bath, chaparral can help soothe and heal sun or UV damage. In the same regard, it is a good remedy for first- or second-degree burns when applied as a honey or water plaster.

Herpes outbreaks. Internally and externally, chaparral is one of the best (herbal or pharmaceutical) ways I know of to help the body deal with any herpes family virus, including chicken pox, shingles, and herpes simplex virus (HSV-1 and HSV-2). Again, it is very drying, and a salve or oil is a little more kind to the tissue than a tincture, but either can be used externally on an outbreak, and the herb can and should be taken internally as well (though only in dropwise dosage; see below).

SPECIAL NOTES

A surprising use of chaparral arose during the COVID-19 pandemic. Taken in steam inhalation or even dropwise internally, this herb greatly helped people affected by the

typical deep lower respiratory tract congestion caused by the virus. The effect was phenomenal in some cases, with rapid response by the respiratory tract and expectoration of phlegm that otherwise had just not been moving out of the lower respiratory tract.

PREPARATION AND DOSAGE

The aerial parts of chaparral are best dried and will last at least a few years if properly dried and stored. Chaparral can be prepared as an infusion, decoction, tincture, liniment, oil, poultice, wound packing powder, or salve.

The plant has high levels of resins and should be tinctured in a high-ABV (at least 80 percent) alcohol. I prefer to prepare it as a multifractional extract: first a percolation tincture (in 90-plus percent ABV alcohol), and then a decoction of that marc, adding glycerin (about 20 percent of the total projected volume) to the decoction at about 1 hour into the simmer, and finally mixing the decoction with the tincture. I have found this multifractional extract to be much more potent than a simple alcohol tincture.

Adult tincture OR MULTIFRACTIONAL EXTRACT dosage (dropwise): 5–10 drops of 1:3 tincture or 1:8 multifractional extract, 1–3 times per day

CAUTIONS/CONTRAINDICATIONS

Chaparral can be toxic in larger quantities or over time. I only give it in a formula — never as a simple — and 90 percent of the time I use it externally only. It should not be taken internally for more than 2 weeks, even in the dropwise dosage given here, without at least an equivalent period of rest.

Some people are highly sensitive to it and will feel flushed or otherwise reactive to it after one or several doses. Discontinue use immediately if that is the case.

CHASTE TREE

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
	Vitex agnus-castus	Verbenaceae

Monk's pepper, vitex		

Chaste tree berry is a hormone balancer and an anti-inflammatory. It has traditionally been thought to lower the libido (hence the name) and more recently has been used to raise progesterone levels. The berry is most commonly used, but the leaf, bark, and even root can be used for their anti-inflammatory properties.

PARTS USED | **BERRY (PRIMARILY), LEAF, BARK, ROOT**

MAIN ACTIONS

- Hormone regulation
- Liver decongestant
- Anti-inflammatory

MEDICINAL USES

Female reproductive and other hormonal support. The berry has the potential to increase progesterone and/or estrogen levels; in my experience, it regulates hormones and libido based on what the body needs. I use it in most formulas related to regulating the menstrual cycle, helping the body balance itself around PMS issues (cramping, irritability, amenorrhea), and hormone-related skin problems, such as teenage or early adult acne. For menopausal symptoms such as night sweats and hot flashes, I combine 3 parts chaste tree berry with 1 part red clover (*Trifolium pratense*).

Stress and cortisol. I often use chaste tree berry to help regulate cortisol levels, especially for perimenopausal women (and many men) who deal with a lot of stress. Chronic stress leads to cortisol tolerance, meaning that the body requires more cortisol to produce the same response. Progesterone is a precursor to cortisol, so as the body produces higher and higher levels of cortisol, progesterone levels drop. In conjunction with lifestyle and nutrition changes and stress management, chaste tree can play a significant role in formulas that help balance these stress hormones.

Liver decongestant. Chaste tree berry is also useful as a liver decongestant and for related digestive issues (dyspepsia, constipation, indigestion, and epigastric pain, especially following fatty meals).

Inflammation. Chaste tree leaf and bark are useful in formulas for chronic inflammation as well as somatic pain and inflammation from injury or trauma. Such formulas can be taken internally or applied externally.

PREPARATION AND DOSAGE

Gather the berries when they have gone from green to grayish in color. Fresh or dried, they can be infused, decocted, or tinctured. A tincture of the fresh berry in about 40-percent ABV alcohol is the most potent preparation.

Adult tincture dosage: ½–1 teaspoon of 1:4 tincture, 1–3 times per day

CAUTIONS/CONTRAINDICATIONS

Although chaste tree is sometimes used by midwives during pregnancy to help normalize hormone levels, it should be used with caution during pregnancy and only under the guidance of a qualified health care practitioner.

COMFREY

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Knitbone	*Symphytum officinale*	Boraginaceae

Few herbs possess the healing power of comfrey for so many tissues, both external (skin) and internal (mucosa, muscle, bone). Unfortunately, its potential comes at the price of possible toxicity, making it one of the most controversial plants in Western herbalism. Some practitioners view it as incredibly healing; others see it as potentially deadly. The truth probably lies somewhere in the middle.

PARTS USED | **ROOT, LEAF**

MAIN ACTIONS

- Tissue and wound healer
- Mucosal vulnerary

MEDICINAL USES

Tissue healing. Comfrey is an amazing tissue healer for specific, short-term, topical use. It is high in allantoin, which increases the water content in the extracellular matrix, providing deep support to tissue cells of most types. It can be taken internally, though toxicity due to pyrrolizidine alkaloids (PAs) is a concern; see here. Externally, comfrey can be applied to minor abrasions, skin irritations, minor burns, closed-tissue injuries (sprains, strains, broken bones), and more. However, it is not antimicrobial, and because it's so effective at healing tissue, it is important not to use it >with deep wounds, as it can easily seal in bacterial infection and cause much worse damage.

Respiratory ailments. I use comfrey as a respiratory expectorant and mucosal vulnerary for the upper airway (e.g., for a dry, hacking cough, sinus infection, or sore throat) or anywhere a mucosal vulnerary is needed (e.g., the urinary tract during a UTI, the stomach lining in the case of an ulcer, or the esophageal mucosa when it's been damaged by acid reflux). It is a superlative healer for the mucosa. In deference to concerns about PAs, I often use plantain for these issues, but it does not have quite the same mucosal restorative power. If the damage is severe, I prefer comfrey, using it in low to moderate dosages for no longer than 2 weeks.

PREPARATION AND DOSAGE

External Use

Comfrey leaf makes an excellent poultice, plaster, lotion, oil, or salve. But note that allantoin, one of the primary active constituents, is soluble only in water, not oil, so a poultice, plaster, or lotion may be more effective than an oil or salve.

Comfrey root also makes an excellent poultice for minor cuts and abrasions, especially around joints that may be difficult to bandage. A plaster of the powdered dried root works like a liquid bandage, adhering to the skin.

Internal Use

Depending on your comfort level with its potential PA toxicity, comfrey leaf can be ingested internally. The leaf, fresh or dried, can be prepared as an infusion, tincture, decoction, glycerite, or multifractional extract. Mature leaves are lower in PA content.

You can also juice the fresh leaf and then add 30 percent alcohol and 20 percent glycerin (to stabilize precipitation). Tincturing is best done with low-ABV alcohol, in the range of 30 percent. Some herbalists use the root internally, but I advise against it, given that it has a higher potential for toxicity than the leaves.

Adult tincture dosage: ½–1 teaspoon of 1:2 fresh leaf or 1:4 dried leaf tincture, 1 or 2 times per day

CAUTIONS/CONTRAINDICATIONS

Comfrey is almost without peer in some of its healing properties, but must be used carefully. The safest way to use it

internally is for just 1 or 2 days. Take care in using comfrey for deep wounds due to the potential for serious (anaerobic) infection to develop. I use it on open wounds only when combined with highly antibacterial herbs or only applied after reepithelialization has started. Use it (especially internally, but I also recommend limited external use) for no longer than 2 or 3 weeks followed by a break of at least the same amount of time.

CRAMP BARK

OTHER COMMON NAMES:	**BOTANICAL NAME:**	**FAMILY:**
Guelder rose, European cranberry, highbush cranberry	*Viburnum opulus*	Adoxaceae

There are many viburnums in North America. While most are edible (berries) and many are medicinal, two species stand out in Western herbal history: cramp bark (*V. opulus*) and black haw (*V. prunifolium*). Some folks prefer one species over the other. However, for the uses listed here, I have not found a large difference in efficacy between the two species.

PART USED | **BARK**

MAIN ACTIONS

- Antispasmodic
- Uterine relaxant and decongestive

MEDICINAL USES

Cramp bark is a pregnancy-safe herb to use for any number of issues involving spasmodic smooth and skeletal muscle pain, particularly in the lower back, upper legs, and genitourinary system.

Antispasmodic and female reproductive support. Cramp bark can be useful in pain management in the same way that a muscle relaxant is used in pharmaceutical medicine. I have consistently found it to be useful for women who are looking for a safe, low-toxicity herb that can help with menstrual cramping, dysmenorrhea, and PMS pain. As an antispasmodic, it works in the same way for lower back pain, leg cramps, restless leg syndrome, or bladder pain and cramping during a UTI or incontinence. It is also useful in formulas for stress and tension headaches when combined with anti-inflammatory herbs like feverfew (*Tanacetum parthenium*) and skullcap (*Scutellaria lateriflora*).

Pregnancy support. Cramp bark has a history of use in the prevention of miscarriages as well as in managing labor and delivery.

Inflammation and tissue healing. Cramp bark can be used both topically and internally for general inflammation and trauma-related inflammation. This includes eyewashes for allergic

conjunctivitis, canker sores, and other mucous membrane inflammation.

It can be used as one of a number of herbs in a protocol for female reproductive system inflammation like pelvic inflammatory disease (bearing in mind that PID is a red-flag medical situation that requires higher medical care as soon as possible).

PREPARATION AND DOSAGE

The easiest extraction method is to tincture cramp bark, whether maceration or percolation, in 50 percent ABV alcohol for fresh plant material or in 40 percent ABV alcohol for dried herb. However, cramp bark has both water- and alcohol-soluble constituents and could benefit from the multifractional approach.

Adult tincture dosage: ½–2 teaspoons of 1:4 tincture, 1–5 times per day

DANDELION

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Puffball, wild succory	*Taraxacum officinale*	Asteraceae

Dandelion root is most commonly used for medicine, though the leaf is useful as well. Both the root and the leaf have strong but different effects on the digestive tract, along with other actions.

PARTS USED | **ROOT, LEAF**

MAIN ACTIONS

- Detoxifying for both the liver and the urinary tract (root)
- Hepatostimulating, hepatosupportive (root)
- Bitter digestive stimulant (leaf)
- Biofilm inhibition (leaf)

MEDICINAL USES

I primarily use dandelion root as a tincture in formulas to provide healthy aquaretic and decongestive support when addressing issues of the urinary tract, lymph, and liver.

Detoxification. Dandelion root is a mineral- and inulin-rich aquaretic. I use it to support the lymph system and liver; it finishes out the detoxification process by encouraging the body to flush out waste products.

Liver decongestant and digestive support. Dandelion root is a gentle but consistent liver decongestant. It assists the rebalancing process necessary to help repair gut and digestive disorders, as well as helping reduce sugar cravings (drink a cup of dandelion tea to satisfy a post-meal sugar craving).

There is some contradictory research on the ability of the root and the stem to lower blood sugar, but it unquestionably affects all of the aspects of the digestive system through its liver, bile, and pancreatic enzyme stimulation, which helps normalize gut function and indirectly assists in blood sugar–related issues. In other words, it wouldn't hurt to use dandelion root in any blood sugar–reducing formula for a condition like type 2 diabetes.

Nourishing tonic. Dandelion root works well in formulas to help with anemia, chronic fatigue, and immune deficiencies. It is similar to parsley root as a nourishing tonic, and both can be used interchangeably or together for this purpose. Dandelion root also promotes lactation.

Bitter. Dandelion leaf is an effective bitter (digestive cholagogue) and also a milder aquaretic than the root. It can be eaten in salads for the bitter effect.

Biofilm buster. Dandelion leaf is also a quorum-sensing inhibitor and works well in formula with other biofilm-busting herbs like uva ursi (*Arctostaphylos uva-ursi*) and Baikal skullcap (*Scutellaria baicalensis*). For this purpose, use the leaf in tincture form, which is most potent.

PREPARATION AND DOSAGE

Eating the fresh young leaf is undoubtedly the best way to absorb its micronutrient and bitter qualities.

Fresh or dried, dandelion leaf and root can both be tinctured (in about 40 percent ABV alcohol), infused, or decocted. I usually prepare them as a percolation tincture. A blend of dried, roasted dandelion root and chicory (*Cichorium intybus*) root is often used as a coffee substitute that helps reduce cravings for sweets and stabilize post-meal blood glucose levels.

Adult tincture dosage: ½–1 teaspoon of 1:3 tincture, 2 or 3 times per day. Take dandelion tincture 30 minutes before meals if you're using it for blood glucose stabilization.

CAUTIONS/CONTRAINDICATIONS

Use dandelion root with caution in the case of any type of gastric upset or inflammation, as larger doses can occasionally exacerbate this condition.

DEVIL'S CLAW

BOTANICAL NAME:	FAMILY:
Harpagophytum procumbens	Pedaliaceae

Devil's claw root is one of my favorite herbs for inflammation. It has a consistent beneficial effect for most types of inflammation, including not only musculoskeletal but also gut inflammation, particularly that related to liver congestion.

PART USED | **ROOT**

MAIN ACTIONS

- Anti-inflammatory, pain relief
- Liver decongestant

MEDICINAL USES

I love devil's claw, particularly for pain and inflammation, and use it often. For musculoskeletal pain, including osteoarthritis, it combines well with ox knee (*Achyranthes bidentata*), cottonwood or aspen (*Populus* spp.), and meadowsweet (*Filipendula ulmaria*).

For pain related to an auto-inflammatory condition, like rheumatoid arthritis or lupus, it combines well with yucca (*Yucca* spp.) and wild yam (*Dioscorea villosa*).

For inflammation and pain related to headaches, it combines well with feverfew (*Tanacetum parthenium*), yanhusuo (*Corydalis yanhusuo*), and Jamaican dogwood (*Piscidia piscipula*).

PREPARATION AND DOSAGE

For internal use, tincture the dried root in 40 percent ABV alcohol as a maceration or percolation. The root can be used topically as well in poultices, plasters, oils, liniments, or salves.

Adult tincture dosage: ½–1 teaspoon of 1:3 tincture, 2–5 times per day

CAUTIONS/CONTRAINDICATIONS

Avoid devil's claw in the case of stomach or duodenal ulcers. Avoid or use with caution in combination with blood-thinning medications.

ECHINACEA

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Coneflower, purple coneflower, pale coneflower, narrow-leaf coneflower	*Echinacea* spp. (especially *E. angustifolia, E. purpurea*, and *E. pallida*)	Asteraceae

Consumer-based herbalism of the 1970s turned echinacea into the "cure for the common cold," a power that has never been claimed by herbalists who use it. While echinacea does not do many of the things it is purported to do, it is a fantastic medicinal plant when used correctly.

PARTS USED | **ROOT, FLOWER, AERIAL PARTS**

MAIN ACTIONS

- Anti-infective
- Immune stimulant

MEDICINAL USES

Lymph and immune systems. Echinacea increases white blood cell count and activity. I use it as an anti-infective herb, both internally and externally, as well as an immune stimulant, specifically for the innate immune system. It mixes well with other herbs that support the immune and lymph systems, like poke (*Phytolacca americana*), red clover (*Trifolium pratense*), cleavers (*Galium aparine*), red root (*Ceanothus* spp.), and astragalus (*Astragalus membranaceus*).

Upper respiratory tract. Echinacea offers wonderful mucosal immune support for the upper respiratory tract, particularly near the onset of a viral or even bacterial upper respiratory infection (which probably contributed to the "cures a cold" misconception). It is excellent for sinus infections, too, whether acute or chronic. Getting the herb in contact with the tissue is important; you can gargle with a diluted tincture, use it in a neti pot or nasal atomizer, or even nebulize it. I like to formulate echinacea with other eliminatives and mucosal vulneraries like spilanthes (*Acmella oleracea*), bee balm (*Monarda* spp.), prickly ash (*Zanthoxylum* spp.), and marshmallow (*Althaea officinalis*).

Urinary tract. Echinacea given sublingually works well for combating urinary tract infections. Herbs that work well with

echinacea for this purpose include uva ursi (*Arctostaphylos uva-ursi*), bilberry (*Vaccinium myrtillus*), kava (*Piper methysticum*), corn silk (*Zea mays*), and Baikal skullcap (*Scutellaria baicalensis*).

Wound healing. *E. angustifolia* and *E. pallida* can be used to encourage wound healing and counteract toxins, such as those from brown recluse spider bites and venomous snakebites. Constituents in these two species neutralize an enzyme that increases skin permeability and allows toxins to flow into fluid and solid tissue compartments in the body. Apply echinacea topically as a soak or a poultice in these cases and take it internally in large hourly doses if necessary. (See Chapter 12 for more specific information on using echinacea for venomous snake and spider bites.)

PREPARATION AND DOSAGE

Echinacea's popularity has led to overharvesting, and for this reason I prefer to use cultivated sources even though wild echinacea is extremely potent. Several species can be found in North America, and each has a differing range of actions depending on the part of the plant being used.

Echinacea root and flowers can be used in salves, poultices, and plasters. For internal use, the root should be tinctured in a high-ABV alcohol, in the range of 90-plus percent.

To stimulate immunity at the onset of an acute illness, I like to mix *E. purpurea* aerial parts with *E. angustifolia* roots, which creates a stronger product than either used alone. The flowers (and leaves) contain polysaccharides that are water soluble but

will precipitate in alcohol, while the roots contain alkylamides and other constituents that are alcohol soluble but will likely precipitate in water. For this reason, I prepare a leaf-and-root combination as a multifractional extract, with both the alcohol and the glycerin concentration at about 30 percent in the final product.

Adult tincture or multifractional extract dosage: 1–2 teaspoons of 1:3 tincture or 1:8 multifractional extract, 1–4 times per day

CAUTIONS/CONTRAINDICATIONS

Echinacea can cause nausea, dizziness, and joint pain in some people who are sensitive to it (or who take too much at a time). Because it stimulates the immune system, people who suffer from autoimmune conditions such as HIV should use it with caution.

ELDER

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Black elder	*Sambucus* spp.	Caprifoliaceae

Elder's medicinal uses are legion. It is probably most famous in the form of elderberry syrup, which is marketed as an immune-boosting cold and flu remedy. While the berry is certainly potent, elder offers many other medicines we can take advantage of.

PARTS USED | **BERRY, FLOWER, LEAF, ROOT, BARK**

MAIN ACTIONS

- Diaphoretic (skin eliminative)
- Anti-infective
- Mucosal support
- Anti-inflammatory

MEDICINAL USES

Immune support. Compared to the other parts of the plant, elder flower probably provides the most consistent medicinal benefit. It is a superb diaphoretic for cold and flu remedies and an excellent respiratory expectorant. It also helps dry an overproduction of mucus, normalizes mucous membrane function, and acts as an anti-infective and mucosal vulnerary for both the respiratory and urinary tracts.

It has anti-inflammatory properties and is a decent aquaretic as well. In this way, elder flower stimulates the production of body fluids (saliva, sweat, mucus) and then drains them, ultimately helping the body normalize the cycle of fluid production and elimination that is a crucial component to immunity. In many respects, elder flower works like ginger (*Zingiber officinale*), except that elder is cooling where ginger is heating. A good eliminative, heating formula for cold and flu season could include elder, ginger, prickly ash (*Zanthoxylum* spp.), boneset (*Eupatorium perfoliatum*), and yarrow (*Achillea millefolium*).

Elderberry is also a decent immune system supporter while being diaphoretic and helpful for treating colds and the flu, like

the flower. The bark and leaf can be used similarly.

Eye ailments. Elder flower can be used as a soothing, anti-infective eyewash for conjunctivitis (viral, bacterial, allergic), tissue damage (e.g., corneal abrasion), or just tired eyes.

Blood sugar. Elder flower can help modulate blood sugar levels in formulas designed for type 2 diabetes. (Use it with care if you are taking other blood sugar control medication.)

Inflammation and pain. Elder flower, berry, leaf, bark, and even root are all useful in different ways for inflammation. I like to use the leaf and bark together in either liniment or oil/salve form for topical musculoskeletal pain, injury, or inflammation. The leaf, bark, flower, and berry can all be used internally to relieve not only acute inflammation from injury but also inflammation from chronic or acute infectious disease of the respiratory tract.

PREPARATION AND DOSAGE

There are many and varied preparation methods for elder, which depend somewhat on the part of the plant that is being used.

Berry

The berry, which can be eaten, has a long history of use as not only medicine but a superfood. To make an extract, I soak the dried berries in apple cider vinegar for at least 12 hours, using

just enough vinegar to cover them, and then strain that vinegar and set it aside. I put the strained berries into a pan with two or three times their volume of a liquid decoction mixture — 50 percent water, 25 percent glycerin, and 25 percent honey — and simmer them for 1 to 2 hours. Then I strain that liquid and set it aside. I do an alcohol wash (95 percent ABV) through the marc, using enough alcohol to give me 30 percent ABV in the final product. Then I combine the vinegar, decoction, and alcohol for a potent multifractional extract.

Leaf and Bark

The leaf and bark are best used externally but can absolutely be used internally if decocted to inactivate the cyanogenic glycosides. For external use, prepare them, fresh or dried, as an oil or salve, which will be effective for soft tissue injury.

Flower

The flower, fresh or dried, can be prepared as an infusion, a decoction, a syrup, a juice, a wine, an oil or salve, an infused honey, and so on. I often prepare it as a tincture or multifractional extract. I use 50 percent ABV alcohol for the fresh flower or 40 percent ABV for the dried flower.

Adult tincture or multifractional extract dosage: ½–1 teaspoon of 1:3 tincture or 1:8 multifractional extract, 1–4 times per day

CAUTIONS/CONTRAINDICATIONS

Use elder flower with care for anyone taking blood sugar medications. The bark and leaf contain cyanogenic glycosides (in differing amounts, depending on the species), which can upset the stomach. Wet heat (e.g., decoction) will render these plant parts safe.

ELECAMPANE

BOTANICAL NAME:	**FAMILY:**
Inula helenium	Asteraceae

Elecampane is a powerful medicinal herb with a wide variety of applications. It can be easily grown in any home garden.

PARTS USED | **ROOT, FLOWER**

MAIN ACTIONS

- Respiratory support
- Anti-infective
- Immune support
- Antiparasitic
- Stimulates digestion
- Anti-nausea (especially the flower)

MEDICINAL USES

Elecampane stimulates expectoration, appetite and digestion, and (gently) the immune system.

Respiratory support. I use the root primarily as a respiratory support and upper respiratory anti-infective, especially for wet coughs and other conditions with a lot of mucus, or in cases where the mucus is thick and difficult to expectorate. Elecampane is useful for viral upper respiratory infections in particular, but it has shown antibacterial activity and can be used for bacterial respiratory infections as well, including those in the lower respiratory tract (like pneumonia, pleuritis, and so on). Elecampane is also effective in formulas for chronic respiratory conditions such as asthma and COPD.

Dental care. As an anti-infective, the root supports gum and tooth health. I make a tooth cleaning formula of equal parts powdered elecampane, myrrh (*Commiphora* spp.), and horsetail (*Equisetum* spp.), with a drop or two of spearmint or peppermint essential oil to preserve the mixture and give it a good taste.

Antiparasitic and antifungal. I use the root in antiparasitic formulas, particularly for giardia and cryptosporidia, as well as in antifungal formulas for candidiasis in the gut. It can be used topically, as well, along with other antifungal herbs such as neem (*Azadirachta indica*) and black walnut (*Juglans nigra*).

Digestive support. Elecampane flowers and root can be used to stimulate appetite and digestion and to reduce or eliminate nausea. The roots are about 40 percent inulin, a prebiotic that

our commensal gut bacteria need. The strong bitter effect (and taste!) of the root helps improve digestion and move sluggish bowels. Elecampane can be used by itself or in formulas to help restore energy and strength and stimulate appetite for people with chronic fatigue or undergoing long-term convalescence.

Antibacterial. Elecampane root is helpful in topical formulas for skin infections such as *Staphylococcus aureus* or MRSA. Here it combines well with oak (*Quercus* spp.), pomegranate rind (*Punica granatum*), and usnea (*Usnea* spp.).

SPECIAL NOTES

When treating patients with COVID-19, I found that steam inhalation and internal dosing with elecampane root, thyme (*Thymus vulgaris*), and chaparral (*Larrea tridentata*), among other herbs, was effective for mitigating respiratory symptoms in particular.

Elecampane works similarly to osha root (*Ligusticum porteri*), which is at risk in the wild and requires ethical wildcrafting. I often use elecampane as a substitute for osha.

PREPARATION AND DOSAGE

The root of elecampane can be prepared as an infusion, a decoction, or a tincture. However, most folks find the taste difficult to tolerate, so I recommend a tincture or multifractional extract over an infusion or decoction. The root can even be candied in honey, although that doesn't necessarily

help the taste. In Traditional Chinese Medicine, the flowers are soaked in honey and then fried.

When tincturing, I prefer the dried root, using about 50 percent ABV alcohol, but the fresh root can be tinctured as well, using about 60 percent ABV alcohol.

For external use, elecampane can be infused into an oil or salve or applied directly on the skin as a poultice.

Adult tincture dosage: ½–1 teaspoon of 1:3 tincture, 1–4 times per day

CAUTIONS/CONTRAINDICATIONS

High doses of elecampane may cause a temporary rapid lowering of blood pressure. Elecampane can be a uterine stimulant and should be avoided or used with caution during pregnancy.

ELEUTHERO

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Siberian ginseng	*Eleutherococcus senticosus*	Araliaceae

Eleuthero comes from the same family as ginseng (*Panax* spp., including Korean ginseng, American ginseng, Chinese ginseng, and so on), and in my experience, it is a better long-term tonic for the

adrenals. It is also a superb and gentle neuroendocrine restorative.

PART USED | **ROOT**

MAIN ACTIONS

- Tonic, restorative
- Adaptogen
- Immune support

MEDICINAL USES

Eleuthero is a mild immune enhancer and is helpful in cases of chronic immune deficiency, chronic fatigue, and fatigue related to convalescence. It can be taken regularly for weeks or even months at a time.

As an adaptogen with wide-ranging effects, it acts in a restorative manner on not only the adrenals and immune system, but also the nervous system (anxiety, stress, stress-related headaches), the circulatory system (stress-related hypertension, stress-related angina pectoris), the musculoskeletal system (fibromyalgia, muscle aches and pains), and the respiratory system (chest and lung weakness).

For myself, I typically use eleuthero in a formula to help support my immune system and adrenals when I know I am going to be under stress (such as teaching several days in a row) and I want to keep my mind and body focused. In that regard, I

find that eleuthero works extremely well with skullcap (*Scutellaria lateriflora*) and damiana (*Turnera diffusa*).

PREPARATION AND DOSAGE

Eleuthero root, fresh or dried, can be prepared as an infusion, decoction, or tincture (in about 40 percent alcohol ABV). The dried root can be powdered and encapsulated.

Adult tincture dosage: ½–2 teaspoons of 1:4 tincture, 1–3 times per day

CAUTIONS/CONTRAINDICATIONS

Use eleuthero with caution in cases of hypertension and for anyone with a history of heart palpitations.

FEVERFEW

BOTANICAL NAME:	**FAMILY:**
Tanacetum parthenium	Asteraceae

Feverfew undoubtedly possesses strong anti-inflammatory and antispasmodic effects, as well as being an interesting antiviral herb.

PARTS USED | **AERIAL PARTS**

MAIN ACTIONS

- Anti-inflammatory
- Antiviral

MEDICINAL USES

Migraine treatment. Feverfew is a well-known option for migraine headaches. It is often formulated with butterbur (*Petasites hybridus*) for this purpose. However, migraines vary in type and not all migraines will respond to this combination. My experience has been that if a migraine is more vasodilatory in nature and a person tells me that ice and/or coffee help, then feverfew usually helps as well.

In this regard, feverfew also helps dry up sinus mucus and can help with sinusitis and sinus headaches.

Herpes outbreaks. Feverfew is a great remedy for outbreaks of herpes family viruses. For this purpose, I usually combine it with chaparral (*Larrea* spp.) and self-heal (*Prunella vulgaris*) and use that formula topically on HSV-1, HSV-2, and shingles lesions. It can be taken internally as well for this same purpose. (See here for other herbs that can be helpful in this kind of formulation.)

Pain management. Feverfew can help relieve arthritic pain, PMS, and spasmodic pain throughout the body, from the gut (e.g.,

stomach cramps) to the urinary tract. The constituent parthenolide is thought to contribute to this effect, though some recent research has shown that it may not be as actively anti-inflammatory as was previously thought.

PREPARATION AND DOSAGE

The aerial parts of feverfew are best tinctured fresh, though dried feverfew tinctures can still be effective. It is easy to grow in a garden so that the fresh herb is available. Both the percolation and the maceration tincturing techniques are effective with feverfew; I generally use 80 percent ABV alcohol for tincturing fresh plant material and 70 percent ABV alcohol for dried plant material.

Adult tincture dosage: ½–1 teaspoon of 1:3 tincture, 1–5 times per day

CAUTIONS/CONTRAINDICATIONS

Use feverfew in formulas rather than as a simple and limit the usage to 4 to 6 weeks at a time. Feverfew can stimulate the uterus and should be avoided or used with caution during pregnancy.

GENTIAN

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Yellow gentian, bitterwort	*Gentiana lutea*	Gentianaceae

Gentian is one of the classic bitter herbs in the long history of herbalism around the world. It is a consistent and useful digestive and liver-supportive herb.

PART USED | **ROOT**

MAIN ACTIONS

- Digestive support and stimulation
- Liver decongestion

MEDICINAL USES

I use gentian primarily for digestive and liver support, though it also has a history of use for reducing inflammation, infection, and fever. In fact, it originally got its name from King Gentius of Illyria (181–168 BCE), who supposedly used this plant to treat malaria among his military troops.

Digestive and liver support and decongestion. Gentian provides liver support while also acting as a strong liver decongestant. It is useful for a wide range of acute and chronic digestive issues, including autoinflammatory syndromes related to leaky gut (eczema, asthma, lupus, and more), gastroesophageal reflux

disease (GERD), IBS-type symptoms, nausea, and digestive upset related to fatty or rich foods. As a bitter, it stimulates digestion and appetite for folks who are convalescent or otherwise need to regain appetite and strength. It can relieve mild cases of constipation. It can also be used in formulas to help normalize blood sugar levels.

As a liver-supportive herb, gentian is also useful in formulas for infectious hepatitis, especially when formulated with milk thistle (*Silybum marianum*).

PREPARATION AND DOSAGE

I like to tincture dried gentian root as a percolation in 50 percent ABV alcohol. It can be prepared as a maceration tincture as well, in fresh or dried form. It's too bitter for most people to take as an infusion or decoction but can certainly be prepared that way if taste isn't an issue.

Adult tincture dosage: ½–1 teaspoon of 1:4 tincture, 1–4 times per day. For digestive support, take gentian approximately 30 minutes before eating.

CAUTIONS/CONTRAINDICATIONS

Avoid using gentian in cases of diarrhea. There are many species of this genus around the world and possibly all are medicinally analagous. However, some, including this one, are at risk due to overharvesting and ecological niche damage. Buy it in cultivated

rather than wildcrafted form, or grow a local native species in your own garden.

GINGER

BOTANICAL NAME:	**FAMILY:**
Zingiber officinale	Zingiberaceae

Well known for its properties as a digestive aid and cold and flu herb, not to mention its culinary uses, ginger is found in nearly every kitchen and can be bought in the produce section of any grocery store. Aside from being ubiquitous, it can also be easily grown at home.

PART USED | **ROOT**

MAIN ACTIONS

- Anti-inflammatory
- Cold and flu support
- Digestive support

MEDICINAL USES

Ginger is easy to work with and use. While dried ginger works fine, I prefer to prepare medicine from the fresh root whenever

possible.

Eliminative support. Ginger is a popular cold and flu herb for good reason. It is heating, boosting circulation throughout the body, opening pores (diaphoretic), and helping flush toxins through the urinary tract (aquaretic).

Additionally, ginger is a competent respiratory relaxing expectorant, helping turn a dry, unproductive cough into a productive one so that the body's mucosal immune system can better do its job. For fevers and chills, it works best taken as a tea (see Preparation and Dosage below). For cold and flu virus formulas, it works well in combination with elder (*Sambucus* spp.), boneset (*Eupatorium perfoliatum*), and yarrow (*Achillea millefolium*).

Digestive support. Ginger is also a well-known remedy for nausea, including motion sickness, morning sickness (see Cautions/Contraindications below), anxiety-related sickness, and acute mountain sickness (AMS). Even ginger ale made from real ginger will usually help AMS symptoms and nausea.

Anti-inflammatory. Possibly because it increases circulation, ginger has definite anti-inflammatory effects throughout the body and works well both internally and topically for all types of musculoskeletal inflammation, from those that are chronic and autoimmune related (such as rheumatoid arthritis) to acute sprains and strains.

For a general-purpose anti-inflammatory formula, I like to use it with devil's claw (*Harpagophytum procumbens*), yucca

(*Yucca* spp.), and wild yam (*Dioscorea villosa*).

PREPARATION AND DOSAGE

For hot tea, grate approximately 1 tablespoon of fresh ginger root into a cup and pour boiling water over it. Steep for several minutes, strain, add honey and lemon to taste, and drink.

Aside from a tea, the methods of preparing ginger are legion. It can be cooked with food, candied, fried in honey, fermented into ginger ale, extracted in vinegar, tinctured, made into a glycerite, and so forth. For tincturing, I prefer to use the fresh root in around 70 percent ABV alcohol, but it can also be tinctured dried at the same percentage.

Ginger can be infused as an oil, salve, or liniment for topical use.

Adult tincture dosage: ½–1 teaspoon of 1:2 tincture, 1–4 times per day

CAUTIONS/CONTRAINDICATIONS

Ginger is a heating herb. Common sense tells us not to give it to someone who is already hot and dry, whether for environmental reasons or from infectious sources. Ginger can stimulate the uterus and should be used with caution during pregnancy.

GOTU KOLA

BOTANICAL NAME:	FAMILY:
Centella asiatica	Apiaceae

This plant can be used for a wide spectrum of issues, including calming anxiety, increasing microcirculation, and healing wounds.

PARTS USED | **WHOLE PLANT**

MAIN ACTIONS

- Nervine
- Tissue proliferant
- Supports microcirculation

MEDICINAL USES

In addition to the uses described below, gotu kola can also be a useful anti-infective herb for the upper respiratory tract.

Anxiety. As a nervine, gotu kola is effective in adaptogenic formulas for people suffering from anxiety or psychological or physical stress. I have been impressed with its use in a protocol to work with PTSD-related anxiety.

Wound healing/scar treatment. The herb's use in Ayurvedic medicine as a detoxifier for skin conditions such as nonspecific dermatitis (eczema) led me to try it in formulas to remodel scar tissue, which led to research on its effectiveness as a wound healer and tissue proliferant. Externally, gotu kola can be used as an oil or salve to facilitate wound healing and scar remodeling.

Circulatory improvement and support. As an overlap with its wound-healing actions, gotu kola works internally to break up congestion of tissue caused by inflammation and stagnant or clotted blood. This action improves microcirculation to a wound area and speeds healing and tissue proliferation (attributed primarily to the triterpenoids present in the plant). It also correlates to the herb's historical use to help resolve pelvic

congestion and dysmenorrhea in women, as well as its use for varicose veins. I use it in formulas for acute mountain sickness (AMS), which is related to poor tissue perfusion.

Gotu kola also appears to increase cerebral perfusion, which may overlap with its use as an anxiolytic but additionally makes this herb useful in helping with cognitive function. We often see it in formulas for memory enhancement or to slow the decline of cognitive function and memory due to age, and it absolutely belongs there.

PREPARATION AND DOSAGE

Both the root and the aerial parts of gotu kola can be prepared dried or fresh as an infusion, decoction, or tincture (in about 40 percent ABV alcohol), and for external use as a salve or oil. For any use relating to cognitive function, AMS, or even anxiety, consider an intranasal application such as nasya oil, neti pot, or atomization.

Adult tincture dosage: ½–1 teaspoon of 1:3 tincture, 1–3 times per day

CAUTIONS/CONTRAINDICATIONS

Overdosing on gotu kola can cause nausea, dizziness, and burning or itching skin.

GUMWEED

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Grindelia, gumplant, wild sunflower	*Grindelia* spp.	Asteraceae

Gumweed has a wide variety of medicinal uses, from the skin to the respiratory tract to the urinary tract. It is a roadside weed throughout most of North America, growing in disturbed areas and along dirt roads and trails, but also in open fields. It has a very distinct (and wonderful) smell, and the flowers are sticky and resinous, hence the name.

PARTS USED | **AERIAL PARTS**

MAIN ACTIONS

- Anti-inflammatory
- Respiratory support and bronchodilation
- Urinary tract support and elimination
- Soothes and heals skin irritation and damage

MEDICINAL USES

Gumweed is a superlative anti-inflammatory that also supports damaged tissue.

Respiratory support. Gumweed is helpful for the upper respiratory tract, sinuses, and upper airway, but also the lower respiratory tract. It inhibits the inflammatory response of mast cells and their release of histamine, but also relaxes the smooth muscle of the airway and is a bronchodilator. This makes it an amazingly effective herb for a range of conditions, from asthma and COPD to acute respiratory infections to allergic reactions. In fact, gumweed is one of the crucial elements in a formula to assist with anaphylaxis in a situation where there is no epinephrine available, along with other anti-inflammatory respiratory herbs like lobelia (*Lobelia inflata*) and ma huang (*Ephedra sinica*).

Gumweed can also assist with inflammation and infection of sinuses, especially in situations of seasonal allergies that initiated or exacerbate a sinus infection. It has anti-infective qualities but is also a strong tissue support.

Separate from respiratory support but related to its anti-inflammatory effects, gumweed can be used as an eyewash or a compress for eyes that are affected by seasonal allergies.

Urinary tract support. Gumweed is an aquaretic and in my experience also has anti-infective qualities that assist the urinary tract during lower urinary tract infections. While it's not necessarily one of the first herbs I use for this, it is very helpful in its eliminative properties for the bladder and rest of the lower urinary tract. It can be irritating to the kidneys in high dosage or long-term use (see Cautions/Contraindications below).

Skin irritation and damage. I first used gumweed back in the 1980s in the foothills of Colorado as an oil and by just rubbing

the resinous flower buds on my skin to help me with a small poison ivy rash. Since then, I have worked with every herb I know of in North America for contact dermatitis but none of them work as well as gumweed for this purpose. Please note that no herb is going to get rid of a giant poison oak or ivy rash covering most of your body. But for small, localized rashes, gumweed is phenomenal. It can also be used for minor burns and abrasions, chronic inflammation (e.g., eczema), and insect bites and stings.

SPECIAL NOTES

Aside from its use for respiratory flu, gumweed has proven to be an excellent herb to help with the symptoms and inflammation-based damage found in the worst cases of COVID-19. Ideally, gumweed should be administered via nebulizer or steam inhalation if possible, along with other respiratory anti-inflammatory and support herbs like thyme (*Thymus vulgaris*), chaparral (*Larrea* spp.) and yerba santa (*Eriodictyon californicum*).

PREPARATION AND TINCTURE DOSAGE

Gumweed can be prepared as an infusion, decoction, glycerite, tincture, oil, or salve. Especially for lower respiratory tract support, gumweed can be administered as a steam inhalation or a nebulizer. For upper airway and sinus congestion it can be administered via nasal atomizer. I tincture the fresh herb with

70 percent ABV alcohol and percolate tincture the dried herb with 60 percent ABV alcohol.

Adult tincture dosage: ½–1 teaspoon of 1:4 dried tincture or 1:1 fresh tincture, 1–4 times per day

CAUTIONS/CONTRAINDICATIONS

Gumweed has medium toxicity and should not be used longer than 3 or 4 weeks at a time (preferably in formula) without a break of equal amount. It can be irritating to the kidney if used longer than suggested in high doses.

HORSETAIL

COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Shavegrass	*Equisetum* spp. (including *E. arvense* and *E. hyemale*)	Equisetaceae

Horsetail is a wonderful herb for anything related to healing and regrowth of bone, connective tissue, hair, nails, and tooth enamel.

PARTS USED | **AERIAL PARTS**

MAIN ACTIONS

- Tissue regenerative
- Builds bone

MEDICINAL USES

I first used this herb on myself over 25 years ago, as a poultice for a broken thumb (see Preface). The healing result was phenomenal.

Healing wounds and broken bones. Taken internally, horsetail is useful for osteoporosis, broken bones in the healing stage, and torn or damaged connective tissue. It also results in healthier hair and nails. Externally, horsetail works well as a poultice or plaster for bone and soft-tissue healing.

Dental health. Horsetail promotes tooth remineralization as part of cavity repair. First clean out any area where a cavity has started, using the tip of a toothpick or other appropriately sized implement, then start a daily regimen of horsetail taken internally (see Cautions/Contraindications).

UTI treatment. Horsetail is also useful in UTI formulas as an effective aquaretic and astringent to the epithelial tissue of the urinary tract.

SPECIAL NOTES

It is an “herban myth” that *E. arvense* is toxic and only the *E. hyemale* species should be used. *E. arvense* is the internationally researched and accepted species in the European and American pharmacopoeias. Significant research has shown that *E. arvense* does not lower vitamin B_1 levels, and although it has some different constituents (of course) than the *E. hyemale* species, both are equally usable as plant medicine within the parameters listed.

PREPARATION AND DOSAGE

Horsetail aerial parts are best taken dried, either powdered and encapsulated or added to a smoothie or other beverage. Some claim that the only effective way to take it is fresh or dried (not tinctured), but I have had good results working with horsetail tincture for every use listed here. Nonetheless, I also recommend it in powdered form if possible.

Horsetail grows near waterways and readily collects toxins. When gathering horsetail, take care that you are not downstream from agricultural runoff or near mine tailings or other possible toxic runoff. It is best gathered near fresh springs.

Tincture

If you choose to tincture horsetail, there are several different methods. Some people prefer to use high-percentage (90+ percent ABV) alcohol, while others prefer an ABV closer to 25

percent. Or you can juice the fresh herb and then add enough alcohol to make up 20 percent of the final volume to preserve it.

You can also prepare it as a multifractional extract: First tincture the herb in high-percentage alcohol, then strain out the marc and decoct it (some constituents extract better with heat), then combine the decoction with enough of the tincture for a final alcohol content of around 40 percent.

Adult tincture dosage: 1 teaspoon of 1:4 tincture, 3 or 4 times per day

CAUTIONS/CONTRAINDICATIONS

Do not take horsetail for more than about 3 weeks at a time, without a break of 2 to 3 weeks between dosages. Large amounts over time can cause kidney irritation.

JUNIPER

COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Cedar, mountain cedar	*Juniperus* spp. (including *J. communis* and *J. ashei*)	Cupressaceae

Juniper berry is an effective antibacterial and antiviral, as well as a potent anti-inflammatory, though some species are more toxic

than others (see Special Notes). The most commonly used medicinal species is *Juniperus communis*, which is very low on the toxicity scale, making it a great choice to use internally. *Juniperus ashei* leans a little more toward medium toxicity and is very potent, so I avoid using it internally.

PARTS USED | **BERRY, NEEDLE**

MAIN ACTIONS

- Antiviral
- Anti-inflammatory
- Increases local blood flow

MEDICINAL USES

Internal uses. *J. communis* berry is an effective eliminative (aquaretic and diaphoretic) that helps the body deal with viral infections such as colds and flus. It contains antiviral constituents such as ferruginol and strong anti-inflammatory compounds such as deoxypodophyllotoxin (DPT). It is also useful for lower urinary tract infections involving the urethra and bladder (see Cautions/Contraindications). The berry also stimulates the immune system and functions as an emmenagogue.

External uses. All nontoxic species of juniper berries are extremely effective in an oil, salve, poultice, or plaster for sprains, strains, and soft tissue injury in general. I find the berry

to be most effective as a carrier herb that stimulates local circulation—that is, it is not only a potent anti-inflammatory but is a decent counterirritant that helps dilate peripheral blood vessels, which assists in carrying other herbs to the injury site under the skin. It also increases blood flow to an open wound that is not healing well, a diabetic ulcer, or other types of atonic wounds. Juniper may also be effective against skin parasites.

SPECIAL NOTES

Of nearly 70 species of juniper, a few are toxic, including *J. sabina*. Though none are native to North America, some are grown as ornamentals. If you are gathering juniper, know your species and focus on those that are native to your region.

Juniper berries should ideally be harvested when perfectly ripe. You can determine ripeness by the color of the skin after you wipe away the grayish film (yeast) over the berry. Depending on the species, green usually means the berry is underripe (and very astringent, which is not necessarily a bad thing). Purple color generally means it is ripe. If the berry is squishy and the skin is starting to wrinkle, then it is probably overripe.

PREPARATION AND DOSAGE

Fresh berries can be tinctured in 60 percent ABV alcohol; dried ones in 50 percent ABV alcohol. Crush them enough to break the skins before tincturing.

Though usually just the berries are tinctured, I sometimes add the needles, which have a strong mucous-clearing effect, if I plan to use the tincture for a steam inhalation. Using the needles alone as a steam inhalation works well to help clear the sinuses.

The berries are also useful in a liniment, oil, or salve for topical use. Again, crush them to break the skins before infusing.

Adult tincture dosage: ½–1 teaspoon of 1:4 tincture, 1–3 times per day

CAUTIONS/CONTRAINDICATIONS

I use juniper only in a formula. It is too strong to be regularly taken internally on its own. When using juniper for a UTI, be sure that there is no kidney (upper urinary tract) involvement, as it may exacerbate kidney irritation.

Juniper should not be used in any type of pyelonephritis or even in the case of chronic kidney weakness or disease. The data is contradictory on whether juniper is safe for pregnancy, so if you have other herbs that would fulfill similar purposes, err on the side of caution and avoid juniper for pregnant women.

LICORICE

BOTANICAL NAME:	**FAMILY:**
Glycyrrhiza glabra	Fabaceae

This sweet, restorative herb is useful for healing the mucosa of the upper airway, esophagus, and stomach and for digestive issues.

PART USED | **ROOT**

MAIN ACTIONS

- Mucosal vulnerary

- Anti-inflammatory
- Hepatoprotective

MEDICINAL USES

Respiratory and digestive healing. Licorice root is one of the most useful mucosal vulneraries for the upper airway, esophageal, and stomach mucosa. It is very effective in helping the body recover from the damage of gastroesophageal reflux disease (GERD), stomach and duodenal ulcers, dry coughs, canker sores, esophageal damage (e.g., varices), and general sore throat symptoms. Like most sweet herbs, licorice is restorative, especially for the digestive tract, not only in its effect on the gut mucosa itself, but also as an anti-inflammatory that helps promote the absorption of nutrients through the gut.

Liver support. Licorice, and specifically its constituent glycyrrhizin, is highly hepatoprotective. In fact, research indicates that licorice can mitigate at least some of the potential damage done by the pyrrolizidine alkaloids (PAs) found in other useful herbs like butterbur (*Petasites hybridus*) and possibly boneset (*Eupatorium perfoliatum*). There are many different PAs and not enough research about them to make this claim across the board, but the protective qualities of licorice on the liver are well documented. (See here for more about PAs.) I use licorice in formulas for fatty liver disease, hepatitis C, alcoholism, type 2 diabetes, and numerous other issues that affect liver health.

Adrenal support. Licorice is used in the West as an adrenal restorative (useful for adrenocortical deficiency). Although

“adrenal fatigue” is a contentious topic in Western herbalism these days, I think that licorice, being both nourishing and restorative, is a good choice in a formula (along with nutrition and lifestyle modifications) to help the body recover from chronic fatigue, malnutrition, certain types of cortisol imbalances, and even malabsorption syndromes.

Anti-inflammatory. Licorice root is an effective anti-inflammatory to consider particularly in the case of autoimmune inflammation, such as rheumatoid arthritis or autoimmune hepatitis, and possibly including inflammation caused by infectious disease such as Lyme disease.

Colds and flu. Licorice is considered to be an “antiviral,” which is a vague term, but it is useful in any cold or flu formula for several of the tissue-supporting reasons given above, not to mention its possible antiviral effects against certain viruses. Its sweet taste can make a formula easier for children to take.

Dental support. Powdered licorice mixed with propolis makes a sticky plaster you can put directly onto and into a canker sore; it helps them heal incredibly fast. And I use quartered licorice roots as chew sticks with tooth-cleaning powder. The root is a little bit on the soft side, but still firm enough to work as a chew stick. It softens enough upon chewing to work as a brush between teeth and has a good flavor.

SPECIAL NOTES

Glycyrrhizic acid (a.k.a. glycyrrhizin), which gives licorice its sweet flavor, is about 50 times sweeter than sugar. Glycyrrhizin

is also toxic above certain dosages, which means you need to be careful when making medicine and formulating this herb. Many people use deglycyrrhized licorice (DGL), which certainly still has some medicinal effects, most notably as a mucosal vulnerary. However, DGL is not nearly as effective as the full-spectrum extract of the root for many of the uses discussed here.

PREPARATION AND DOSAGE

I usually use licorice as a base for multifractional extracts for the respiratory system, taking advantage of both the sweet flavor and the root's usefulness as a mucosal vulnerary and relaxing expectorant. In fact, its sweetness makes licorice root useful for flavoring many otherwise bitter formulas — if its medicinal properties are appropriate for the formula, of course.

Glycyrrhizin extracts well in both alcohol and water, whether hot or cold; an ABV of anywhere between 30 and 60 percent works fine for tincturing. There is no need to tincture at a ratio stronger than 1:5. When I prepare licorice root as a multifractional extract (the best method of extraction, in my opinion), my ratios come out at least 1:10 or even 1:15, but they are highly potent and I prefer them to a 1:5 tincture.

In any kind of extraction, take care not to expose licorice root to excessive heat. Temperatures over about 210°F/99°C can potentially destroy the glycyrrhizin (along with other important medicinal constituents). So, if you are decocting the root for a multifractional extract, keep it at a very low simmer. The same can be said for preparing a glycerite using the wet-bath canning

method described in Chapter 5; a very low simmer for several hours should not damage the glycyrrhizin.

Adult tincture OR MULTIFRACTIONAL EXTRACT dosage: ½–1 teaspoon of 1:5 tincture or 1:8 multifractional extract, 1–3 times per day for no longer than 3 weeks, with an equivalent amount of time as a break. Otherwise, using the limits explained in calculating licorice dosage (see here), ½ teaspoon of 1:5 tincture or 1:8 multifractional extract, once per day.

CAUTIONS/CONTRAINDICATIONS

Licorice root should be either avoided or taken as DGL by people who have chronic high blood pressure (hypertension); particularly hypertension that is secondary to adrenal hyperfunctioning, and people who are otherwise sensitive to glycyrrhizin. Read all dosage recommendations thoroughly.

CALCULATING LICORICE DOSAGE

The appropriate daily dosage for licorice is a contested issue. A limit of somewhere in the range of 0.2 mg/kg (milligram of medicine/kilogram of body weight) of glycyrrhizin per day is accepted by many as a safe, short-term (3 to 4 weeks) dosage. You can probably assume that the maximum glycyrrhizin you will obtain in the best extraction will be no more than 20 percent of the total volume, though it will likely be far lower than that. This

means that the maximum amount of licorice extract you would safely give to someone for short-term use would be 1 mg/kg per day. For a person weighing 100 kilograms (220 pounds), this amounts to 100 mg of glycyrrhizin per day.

A 1:5 tincture of licorice comprises 1 gram of licorice in 5 ml of tincture. If 20 percent of that licorice is glycyrrhizin, then you have 200 mg (200 mg is 20 percent of 1 gram) of glycyrrhizin in 5 ml of tincture. The aforementioned person weighing 220 pounds, for whom 100 mg of glycyrrhizin per day is the maximum safe dosage, could take up to 2.5 ml of that 1:5 tincture for short-term use. If you are formulating your licorice with other herbs (which you should be doing anyway for maximum effect), then you'll need to do a little bit more math to figure out how much of your total formula is licorice and what the overall dosage of your formula would be.

In my opinion, this calculation of the maximum daily dosage of licorice skews further than necessary on the conservative side, particularly in an individual with normal blood pressure. The issue at hand in glycyrrhizin toxicity relates to aldosterone levels and a resulting increase in blood pressure. In someone with no hypertension issues, this safety limit is probably a bit over the top.

LOBELIA

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Indian tobacco	*Lobelia inflata*	Campanulaceae

A valuable addition to any herbal first-aid kit, lobelia is an effective smooth muscle relaxant most commonly known as a respiratory expectorant and anti-inflammatory, especially for the upper respiratory tract.

PARTS USED | **LEAF, SEED**

MAIN ACTIONS

- Smooth muscle relaxation
- Bronchodilation
- Anti-inflammatory
- Pain relief

MEDICINAL USES

Lobelia leaf has a long history as a reliable and useful medicinal herb, but unfortunately it garnered much negative press as a result of political warfare between different sects of medicine during the nineteenth century. The death of at least one patient that was (probably falsely) ascribed to the use of lobelia led to a lasting misunderstanding on the part of orthodox medicine about the diverse and incredibly potent medicinal properties of this amazing herb.

Respiratory therapy. Lobelia is commonly used as a respiratory expectorant that is both relaxing and stimulating. Its effectiveness as a smooth muscle relaxant applies equally to the respiratory tissue in the case of bronchial spasms, asthma, and even anaphylactic reactions. I have often seen the onset of respiratory allergic responses (in some cases possibly the first stages of anaphylaxis) turn around in a matter of seconds after sublingual administration of several drops of lobelia tincture.

Lobelia leaf is helpful for easing the acute trauma of smoke inhalation, which is interesting, as it also works well in combination with respiratory support herbs like mullein

(*Verbascum thapsus*), skullcap (*Scutellaria lateriflora*), and yerba santa (*Eriodictyon californicum*) in formulas designed for people trying to quit smoking.

Urinary tract issues. The smooth muscle relaxant effects that are so effective in the respiratory tract are also helpful in the urinary tract in the case of urinary stones and neurogenic bladder. The consistently reliable protocol for urinary stones that are small enough to pass (usually less than 7 mm in diameter) is to relax the urinary smooth muscle and increase urinary flow.

Lobelia and celery seed (*Apium graveolens*) are both excellent for the smooth muscle relaxation as well as providing some aquaresis. For even more flow, add parsley root (*Petroselinum crispum*) to the formula.

Other uses. The smooth muscle relaxation of lobelia is also functional in other viscera such as the gut (for intestinal colic and cramping), the gallbladder (for gallbladder attacks), and even the heart (for angina pectoris).

Lobelia is a decent diaphoretic, making it useful as a cold and flu herb, and a useful anti-infective and anti-inflammatory in the external treatment of wounds. More effective is its use as a pain reliever for external injuries, which can include sprains, strains, and soft tissue injuries, and also burns. A burn poultice using raw honey and including lobelia in the formula can relieve pain, even for severe, full-thickness burns. For this use, lobelia goes well with burdock leaf (*Arctium lappa*), comfrey (*Symphytum officinale*), and plantain (*Plantago* spp.).

Lobelia was used historically as a midwifery herb as it eases difficult, painful labor and pain.

SPECIAL NOTES

Lobelia has come to the forefront for use during the COVID-19 pandemic. Whether inhaled or taken sublingually or orally, lobelia has been a helpful addition to the protocols for this upper (and lower) respiratory tract infection. This goes more to show lobelia's general efficacy as a respiratory expectorant and bronchodilator than to its efficacy as an "antiviral," in my opinion.

PREPARATION AND DOSAGE

I tincture the dried leaf and seed together, in about a 50:50 ratio, using 70 percent ABV alcohol. The leaf is far more widely available than the seed, however. Whatever extraction method you use, be sure not to overheat it, as the most potent alkaloids are unstable and heat sensitive. Long, high-temperature decoctions are not very viable as medicine, unless you want to produce an emetic.

Lobelia leaf and seed can also be infused into oils and salves and used in (cold) poultices and plasters.

Adult tincture dosage: Dosage varies depending largely on what the tincture is being used for, but a decent average can range from 5–10 drops to ¼ teaspoon of 1:4 tincture, 2 or 3 times per

day, depending on a person's sensitivity to this herb. See Cautions/Contraindications below for overdose symptoms.

CAUTIONS/CONTRAINDICATIONS

Lobelia is contraindicated during pregnancy (aside from its use to assist labor). Overdosing can cause dizziness, diarrhea, excessive salivation, disorientation, visual disturbances, and nausea/vomiting. I always use lobelia in a formula, never alone.

MARSHMALLOW

OTHER COMMON NAMES:	**BOTANICAL NAME:**	**FAMILY:**
White mallow	*Althaea officinalis*	Malvaceae

Marshmallow is used primarily for its demulcent qualities. It is a superlative mucosal vulnerary, restoring tissue suffering from infection, inflammation, and any type of irritation.

PARTS USED | **ROOT, LEAF**

MAIN ACTIONS

- Demulcent, mucosal vulnerary
- Anti-infective

- Galactagogue

MEDICINAL USES

Respiratory support. Marshmallow is probably my favorite all-around herb for respiratory support because of its consistency (it works for everyone), effectiveness, and low toxicity. You can make a cold infusion (described below) of 8 to 16 ounces to sip on all day long, as I do to keep my voice from going hoarse whenever I'm teaching all day. If you drink too much, the worst that can happen is all that moisture to the gut mucosa might loosen up your bowels a little.

Marshmallow's mucilaginous qualities make it ideal for upper respiratory issues such as sinus infection, sore throat from viral or bacterial infection, mouth and gum sores, dry cough, and irritation of any upper respiratory mucosa, including dryness from breathing in pollutants or just being exposed to dry desert air.

Urinary tract support. I like to use marshmallow (both the root and the leaf) in formulas for urinary tract infections, as it is both relaxing and soothing to the urinary tract. For UTIs as well as general kidney support, it goes well with other urinary tract support herbs like corn silk (*Zea mays*), nettle (*Urtica dioica*) root, and plantain (*Plantago* spp.), and it can be used to counterbalance other more antimicrobial, astringent, and potentially irritating herbs in any urinary tract formula.

Gastrointestinal tract support. As a vulnerary, marshmallow supports the repair of the mucosa in the esophagus, stomach,

and small and large intestines while also providing prebiotic support for the commensal bacteria of the gut. It is an excellent herb to consider for acid reflux pain (healing the esophagus), stomach ulceration, constipation, inflammatory bowel diseases (e.g., ulcerative colitis and Crohn's disease), and diverticulitis.

Counteracting dryness and heat. This moistening herb can be used both internally and externally to help general conditions of dryness and heat — for example, a person who is dehydrated, who is recovering from a heat injury, who is unused to extreme dry and/or hot weather conditions, or who has just had too much sun.

Topical use. Marshmallow root can be used externally to draw out infection and pus while softening skin and soft tissue around an infection. It is useful in sitz baths, douches, and suppositories for tissue healing. The leaf can be used externally to help soothe inflammation. I use both the leaf and the root in oils and salves to help soothe skin irritation, abrasions, and minor burns. A marshmallow poultice or plaster is cooling and soothing for first- and second-degree burns.

PREPARATION AND DOSAGE

Water is the best solvent by far for marshmallow root and leaf. As with other demulcent herbs, the root and leaf are best prepared as a cold infusion, with a minimum of 30 to 60 minutes of soaking and stirring. A hot decoction is also useful, but I find the result to be better when I do a cold infusion first,

then a hot decoction. Other methods of preparation for the root include a honey infusion, lozenges, or an oil or salve.

Although alcohol is not the best solvent, a low-percentage alcohol (about 25 percent ABV) can effectively preserve a water extract of marshmallow. When taking this route, I prepare marshmallow as a multifractional extract: first a cold infusion; then a decoction, with enough glycerin to make up 20 percent of the projected total final volume of extract; and finally a 95 percent ABV alcohol percolation, using enough alcohol to yield a final ABV of 20 percent after I mix all the fractions together. Unlike most herbs, marshmallow can be taken as a simple.

Externally, marshmallow can be used as a poultice, a plaster, a wash, or any other method of external application.

Adult multifractional extract dosage: 1–2 tablespoons of 1:10 extract, taken as needed throughout the day, for several weeks

SPECIAL NOTES

Some practitioners claim that a hot-water extraction of marshmallow is better than a cold-water one, because a hot-water decoction is “slimier” (more mucilaginous). However, heating the root in a decoction will also bind some of the polysaccharides into a gel along with the woody part of the plant, rather than releasing those constituents into the water. Doing a cold-water infusion followed by a hot-water decoction gives you the best of both worlds.

CAUTIONS/CONTRAINDICATIONS

Marshmallow is generally quite safe but taking large amounts can loosen stools and cause mild diarrhea in some people.

MEADOWSWEET

BOTANICAL NAME:	**FAMILY:**
Filipendula ulmaria	Rosaceae

A primary constituent of meadowsweet is salicylic acid, and this plant is the source of the original aspirin (not willow, as is commonly supposed). While meadowsweet has some of the same anti-inflammatory effects as aspirin, it has other, further-reaching medicinal uses as well.

PARTS USED | **AERIAL PARTS**

MAIN ACTIONS

- Anti-inflammatory
- Healing
- Aquaretic

MEDICINAL USES

Anti-inflammatory. The salicylic acid found in meadowsweet does not have the same blood-thinning effect that we sometimes

use aspirin for. In fact, because meadowsweet is fairly astringent, it can help slow or stop bleeding (without inhibiting the effects of aspirin in the body at the same time). Although high doses of meadowsweet can irritate the mucous membrane of the gut, in normal doses it is useful as an anti-inflammatory and calming herb for gut irritation.

Tissue healing. Meadowsweet also has some tissue- and wound-healing effects, both externally and internally, and is useful for connective tissue injuries, osteoarthritis or rheumatoid arthritis, and other joint or soft tissue pain. In these cases, it is more effective when used externally (i.e., as a salve or liniment).

Colds and flu. Meadowsweet is an aquaretic, which also makes it a useful eliminative herb, especially when it is taken at the onset of a cold or flu accompanied by a headache. It combines well with elder (*Sambucus* spp.) flower, yarrow (*Achillea millefolium*), boneset (*Eupatorium perfoliatum*), prickly ash (*Zanthoxylum* spp.), and feverfew *(Tanacetum parthenium*) to relieve the aches, pains, fever, and headaches of a bad flu.

PREPARATION AND DOSAGE

The aerial parts of meadowsweet can be tinctured, fresh or dried, as a percolation. I use around 70 percent ABV alcohol with fresh meadowsweet and 80 percent ABV alcohol with the dried herb. Salicylic acid is much more soluble in alcohol than in water. If you must use water, heating it to a high simmer (about 200°F/93°C) will improve solubility.

You can also tincture the fresh herb as a maceration, and if you can heat it (even just by putting it in the attic for a month over the summer), it will turn out even better.

Adult tincture dosage: ½–1 teaspoon of 1:3 tincture, 1–4 times per day

CAUTIONS/CONTRAINDICATIONS

Overdosing can cause stomach upset, nausea, and vomiting. Avoid use in the case of salicylate allergies.

MILK THISTLE

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Marian thistle	*Silybum marianum*	Asteraceae

Milk thistle seed is primarily useful as a hepatoprotective. It is one of the better-known herbs in the mainstream medical community because of numerous studies done on silybin, which is considered its primary constituent.

PART USED | **SEED**

MAIN ACTIONS

- Hepatoprotective
- Antioxidant
- Mild aquaretic

MEDICINAL USES

Silybin protects the liver from toxins by boosting protein synthesis, among other effects. Other constituents, such as silychristin, contribute to the herb's hepatoprotective qualities as well.

Liver ailments. Milk thistle seed is useful for people suffering from cirrhosis of the liver (from alcoholism, hepatitis, and so on) as well as those with classic liver congestion symptoms such as portal vein hypertension, poor digestion of fats and proteins, leaky gut syndrome, and all of the cascading digestive issues stemming from a congested liver.

Detoxification. A superlative antioxidant with many anticarcinogenic properties, it is useful for people undergoing chemotherapy or subject to other toxins, whether ingested or injected. It can be also be used in the case of food poisoning or ingestion of poisons, working in tandem with activated charcoal. It is important not to take them at the same time but to offset them by a few hours so that the charcoal does not bind the milk thistle. I prefer to give the charcoal first.

Other uses. Milk thistle seed stimulates circulation and menstruation and is a mild aquaretic as well as a mild relaxing

expectorant. It is also useful in formulas to tonify and support venous blood flow for treating varicose veins, venous ulcers, and even diabetic ulcers. For this purpose, it works well in formula with yarrow (*Achillea millefolium*) and butcher's-broom (*Ruscus aculeatus*).

Milk thistle can be helpful in formulas designed to support the body in dealing with autoimmune-related skin issues. I use it with herbs like Oregon grape (*Mahonia* spp.), heartsease (*Viola tricolor*), and burdock (*Arctium lappa*) when working with eczema, psoriasis, and other atopic dermatitis conditions.

PREPARATION AND DOSAGE

Milk thistle seed is arguably best administered in powdered form as capsules or mixed into a smoothie. However, an herb powder is usually not nearly as practical for long-term storage and/or dosing and formulating in a clinical environment.

Silybin is more soluble in alcohol (and probably in glycerin) than water. With the goal of pulling as much of a complete constituent profile from the plant as possible, I prefer to prepare milk thistle seed as a multifractional extract (see sidebar below).

If the multifractional extract seems too complicated, you can obtain a usable product by preparing milk thistle seed as a simple percolation (or even maceration) tincture, using 80 percent ABV alcohol. Applying heat during the tincturing process will give you an even better result.

Adult tincture or multifractional extract dosage: ½–2 teaspoons of 1:4 tincture or 1:10 extract, 1–4 times per day

CAUTIONS/CONTRAINDICATIONS

Milk thistle seed may reduce or increase the effects of some pharmaceuticals due to its effect on liver detoxification.

MILK THISTLE MULTIFRACTIONAL EXTRACT

Making a multifractional extract of milk thistle is a little more complicated than it is with many other herbs, but it is worth doing because it results in superior medicine. Here is an example for making approximately 1,000 ml of finished extract.

1. Grind 250 grams of milk thistle seed in a coffee grinder for 20 to 30 seconds. You don't need to grind

them to a fine powder; just break the seeds down a bit. Transfer the ground seeds to a flat dish.

Add enough distilled or filtered room-temperature water to thoroughly saturate them. Then add an additional 150 ml of water and let soak for 30 minutes.

2. Strain the seeds, collecting the infusion (the strained water) and setting it aside. You should have about 150 ml. Place the marc (the soaked ground seeds) into a pot of water with 350 ml of water and 200 ml of glycerin.

   Mark the level of the liquid in the pot. Now add another 250 to 350 ml of water. Simmer the seeds, stirring frequently, until the liquid returns to the original level.

3. Strain well, until the marc does not drip at all. Pour the decoction (the strained water and glycerin) into the infusion. Your total fluid should measure about 700 ml.

4. While the marc is still hot from being simmered, transfer the strained seeds into a percolation funnel lined with a paper filter. Pack the marc in and set the funnel into a canning jar.

   Pour about 350 ml of 95 percent ABV alcohol through the funnel. An acceptable drip rate for a percolation tincture is about 1 drop every 3 to 5 seconds. Slow

the drip to an appropriate rate. (See here for more details.)

5. When all the alcohol has passed through the marc, you should have between 300 ml and 350 ml, depending on how dry the marc was. Mix this tincture with the rest of the extraction for a total of around 1,000 ml, in a 1:4 ratio.

   If you have a Soxhlet distiller (see here), run a separate batch of ground milk thistle seeds through it and pour the final product in with the rest. At least 120 ml of Soxhlet extraction per quart of multifractional extract is a good amount to aim for.

MOTHERWORT

BOTANICAL NAME:	**FAMILY:**
Leonurus cardiaca	Lamiaceae

Although historically used extensively for female health, as the common name indicates, motherwort has many amazing medicinal qualities.

PARTS USED | **AERIAL PARTS**

MAIN ACTIONS

- Cardiotonic nervine
- Aquaretic, diaphoretic
- Healing

MEDICINAL USES

Cardiovascular/nervine. Motherwort is a nervine, and particularly so for the cardiovascular system. Like bugleweed (*Lycopus* spp.), it helps calm anxiety-related heart issues such as hypertension, palpitations, and tachycardia, making it an excellent herb in both nervine (calming) and cardiovascular formulas. It also may help reduce thyroid activity and have a calming effect on hyperthyroid conditions.

Female health. Motherwort tonifies and stimulates the uterus, which can include inducing labor. Along with cramp bark (*Viburnum opulus*) and black cohosh (*Actaea racemosa*), among other herbs, motherwort can help lack of menstrual flow (amenorrhea), spotting, and painful cramping during periods.

As a wound healer, motherwort has a history of use for reducing postpartum bleeding and healing vaginal tissue, both when taken internally (as a tea or tincture) and externally in a bath or sitz bath.

Other uses. Motherwort is a good eliminative herb that can help increase sweating (diaphoresis) and urination (aquaresis) and in that regard is useful in cold and flu formulas, particularly with

upper respiratory infections. As an aquaretic, it can be useful in formulas for skin issues, such as eczema, where there may be kidney involvement along with the more common liver issues. It can also be used in UTI formulas.

PREPARATION AND DOSAGE

The aerial parts of motherwort can be tinctured fresh or dried, though, as with most of the mint family, I prefer to use the fresh herb. An alcohol content of 40 to 50 percent ABV alcohol works well for tincturing motherwort.

Adult tincture dosage: ½–1 teaspoon of 1:3 tincture, 2–4 times per day

CAUTIONS/CONTRAINDICATIONS

Motherwort is contraindicated during pregnancy because of its uterine-stimulating properties, though experienced midwife herbalists sometimes use it with caution. Use with caution in hypothyroid conditions.

MUGWORT

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
	Artemisia vulgaris	Asteraceae

Cronewort, motherwort (though not to be confused with *Leonurus cardiaca*)		

There are several medicinal *Artemisia* species. After mugwort (*A. vulgaris*), wormwood (*A. absinthium*) and sweet Annie (*A. annua*) are the two most well known. I use estafiate (*A. ludoviciana*), which is prolific in my area. These artemisias are not synonymous medicinally, but mugwort is a useful medicine in a variety of ways.

PART USED | **LEAF**

MAIN ACTIONS

- Liver decongestant
- Anti-infective
- Anti-inflammatory
- Eliminative
- Causes lucid dreaming

MEDICINAL USES

Liver and digestion. Mugwort is a bitter, and like most bitters it is also a cholagogue that helps decongest the liver. It clears dyspepsia and helps alleviate nausea. It is also anti-infective and anti-inflammatory, both internally and externally, and works

well in anti-infective formulas for the gut against bacteria, protozoa, and parasites.

Eliminative. Mugwort is an effective diaphoretic as well as aquaretic and works well in cold and flu formulas. As an eliminative, it is probably best known to be an emmenagogue, promoting (and harmonizing) menstruation.

Epilepsy. Historically, mugwort has been used to treat epilepsy, and current studies seem to support this usage.

Lucid dreaming. Interestingly, mugwort can help a person have more lucid and vivid dreams. For this purpose, it can be taken as a tincture sublingually and/or orally, smoked, or used as a smudge or incense.

Tissue healing. Externally, mugwort works extremely well to help heal bruises, strains, and sprains in a salve or poultice formula. It goes well with arnica (*Arnica montana*), juniper (*Juniperus* spp.), and yarrow (*Achillea millefolium*) for this purpose.

PREPARATION AND DOSAGE

Fresh or dried mugwort leaves can be prepared as capsules (dried and powdered), an infusion, a decoction, a tincture (use 50 percent ABV alcohol for fresh leaves and 40 percent ABV alcohol for dried leaves), an oil or salve, a poultice, or a plaster.

Adult tincture dosage: ½–1 teaspoon of 1:4 tincture, 1–4 times per day

CAUTIONS/CONTRAINDICATIONS

Mugwort is a uterine stimulant and may also dry up milk production; it should not be taken during pregnancy or while breastfeeding. Mugwort is best taken in a formula and for no longer than 3 to 4 weeks at a time with a break in usage for the same number of weeks.

MULLEIN

COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Adam's rod, beggar's blanket, feltwort (many others)	*Verbascum thapsus*	Scrophulariaceae

This easy-to-grow herb is found across North America. Its wide range of medical properties and applications, which differ depending on which part is used, make it a valuable addition to any materia medica.

PARTS USED | **ROOT, LEAF, FLOWER**

MAIN ACTIONS

- Respiratory support (leaf)
- Treats ear infections (flower)
- Bladder and low back support (root)
- Reduces prostate inflammation (root)

MEDICINAL USES

Rather than working through the different body systems that mullein can act upon, let's look at the individual plant parts (root, leaf, flower), since they differ in usage.

Root. Mullein root is a gentle aquaretic and anti-inflammatory for the urinary tract, as well as providing smooth muscle relaxation and tone for the bladder. It can be used to treat incontinence, bladder infection and irritation, bed-wetting, and UTIs. I have used it successfully in formulas for interstitial cystitis as well.

I have found the root to be very useful in formulas for reducing prostate inflammation, to include benign prostatic hypertrophy (BPH).

Some practitioners like to use it internally for lower back pain and to loosen tight connective tissue, especially around the lower back (e.g., for recovery from a herniated disk).

Leaf. Mullein leaf is useful for respiratory support. It is a relaxing expectorant and bronchodilator while also drying up

mucous secretions. It can be used for bladder and urinary tract infections in the same way as the root, though it may not be as effective.

Externally, the leaf can help draw out infection on or under the skin, including abscesses, especially when applied as a heated poultice.

Flower. Mullein flower is both an anti-infective and a tissue healer (vulnerary), making it useful for inflamed and infected tissue. It is often used in conjunction with garlic as an oil for middle ear infections, soothing and providing anti-infective, regenerative assistance to the tympanic membrane (to be used only when the membrane has not been perforated or compromised).

The flower is also arguably a better bronchodilator and relaxing expectorant than the leaf and useful internally for asthma.

SPECIAL NOTES

There is some controversy around mullein seed being toxic, having been used as fish poison by Indigenous people. The most credible information seems to point to the fact that the seeds do contain saponins, which make it difficult for fish to breathe, but do not contain some of the more toxic compounds that have been suggested.

Like the rest of the plant, mullein seeds are medicinal (with antispasmodic, bronchodilator, and other properties), but I did not list them because the other parts of the plant are useful in

similar ways, so there is no pressing need to use the seeds. Not to mention that they are pretty tedious to harvest.

PREPARATION AND DOSAGE

Mullein root, leaf, and flower are prepared in a variety of ways. Fresh or dried, all of them can be infused, decocted, or tinctured (in 40 to 50 percent ABV alcohol). The root, leaf, and flower can also be prepared as a poultice, plaster, oil, or salve.

Mullein is a biennial plant that reseeds easily. The different parts of the plant should be gathered at different points in the plant's growth. The leaf is best when harvested in the spring and early summer of its first year. Harvest the root in the fall of the first year, before the seed stalk appears. The flowers bloom at different times along the stalk, so flower harvesting is best done from a group of plants. Gather the flowers as they bloom, returning every few days to harvest another batch.

Adult tincture dosage: ½–2 teaspoons of 1:4 tincture, 1–4 times per day

CAUTIONS/CONTRAINDICATIONS

None known but see Special Notes above.

MYRRH

BOTANICAL NAME:	FAMILY:
Commiphora spp.	Burseraceae

Myrrh resin has been used medicinally for centuries. It is a potent anti-infective and anti-inflammatory that has a variety of applications.

PART USED | **RESIN**

MAIN ACTIONS

- Antiviral
- Antibacterial
- Antifungal
- Anthelmintic

MEDICINAL USES

Anti-infective and anti-inflammatory. Myrrh helps relieve inflammation and infection in a number of ways, whether on the surface of the skin (as a powder in poultices), in the mouth and upper respiratory tract, and in the gut, especially in the case of round worms and candidiasis. It is useful for infections of the genitourinary tract such as UTIs, sexually transmitted diseases, and vaginal candidiasis. It also promotes expectoration and could be used in a formula for upper respiratory tract infections, including strep throat.

Wound healing. Myrrh can assist with tissue repair in wounds by increasing microcirculation and reducing inflammation, while also providing local anti-infective support.

Dental care. Myrrh is an astringent and tightens gum tissue in the mouth, which can help with loose teeth. Its anti-infective properties make it extremely useful for gingivitis, cavities, canker sores, and other mouth and gum infections.

Thyroid support. I have been using myrrh in formulas for various issues related to hypothyroidism for several years, both internally and topically. Some studies indicate that it increases the conversion of T4 to T3, the active form of thyroid hormone. I formulate it with other herbs like chaff-flower (*Achyranthes aspera*), gotu kola (*Centella asiatica*), red sage (*Salvia miltiorrhiza*), and black cumin (*Nigella sativa*) for topical application to the thyroid area.

Other uses. Myrrh is also an emmenagogue and promotes the progression of labor as a uterine stimulant.

PREPARATION AND DOSAGE

Myrrh resin is not water soluble and must either be used directly as a poultice or plaster or tinctured in at least 90 percent ABV alcohol. I use 95 percent. I also use powdered myrrh in a tooth powder formula.

Adult tincture dosage: ½–1 teaspoon of 1:4 tincture, 1–3 times per day

CAUTIONS/CONTRAINDICATIONS

Myrrh is contraindicated during pregnancy.

NEEM

BOTANICAL NAME:	**FAMILY:**
Azadirachta indica	Meliaceae

Neem is a powerful anti-infective that stimulates the immune system.

PARTS USED | **LEAF, SEED, BARK**

MAIN ACTIONS

- Antiviral
- Antibacterial
- Antiprotozoal, antifungal, antiparasitic

MEDICINAL USES

Liver decongestion. Neem, a liver decongestant, has been used in Ayurvedic medicine for dyspepsia and stomach ulcer and for skin problems often related to liver and lymph congestion, such as eczema and allergic dermatitis. It can be toxic if taken in high

dosages for extended periods of time, so it is important to formulate neem with other liver-supportive herbs for this use, such as burdock (*Arctium lappa*) root or seed, dandelion (*Taraxacum officinale*) root, and milk thistle (*Silybum marianum*) seed.

Skin support. I use neem internally, in a formula with Oregon grape (*Mahonia* spp.), burdock (*Arctium lappa*), heartsease (*Viola tricolor*), and wild lettuce (*Lactuca* spp.), for acne, eczema, and atopic dermatitis. The formula often provides immediate improvement while also, over the longer term, addressing the causative effects.

Other uses. Internally, neem is traditionally used for malaria and malarial fevers (as a diaphoretic), and externally it is used for yeast infections (in sitz baths and douches), ringworm, wound infections, and wound healing. I have also used it in combination with astragalus (*Astragalus membranaceus*) for several HIV-positive clients to successfully raise their CD4 (T-cell) count.

PREPARATION AND DOSAGE

The leaves, seeds, and bark of the neem tree all offer medicinal qualities. However, the leaf is most commonly used and readily available. I prefer the fresh leaf tincture over the dried leaf, but the dried leaf tincture works just fine if that is what you have. I grow neem and tincture the fresh leaves in 50 percent ABV alcohol in as close to a 1:1 ratio as possible. The dried leaves can be tinctured effectively in at least 40 percent ABV alcohol.

In addition to being tinctured, which I believe is the best method, neem can be infused or decocted (dried or fresh), or it can be dried, powdered, and encapsulated. For topical use, it can be infused into an oil or salve or used directly on the skin as a poultice or plaster.

Adult tincture dosage: ½–1 teaspoon of 1:1 tincture, 1–4 times per day depending on the severity of the condition

CAUTIONS/CONTRAINDICATIONS

Avoid internal use during pregnancy or lactation. Overdose of neem can result in stomach irritation, nausea, vomiting, and diarrhea. If it is necessary to use long term, I limit the usage to 4 to 6 weeks, with a break for approximately the same amount of time before resuming.

NETTLE

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Stinging nettle	*Urtica* spp. (especially *U. dioica*)	Urticaceae

Nettle leaf is near the "power food" end of the spectrum of nutrient-dense herbs, while also being an extremely potent medicinal herb. This makes it an excellent supportive and

regenerative herb for a myriad of disorders. The root and seed are good anti-inflammatories and have other applications as well.

PARTS USED | **ROOT, LEAF, SEED**

MAIN ACTIONS

- Nutritive
- Anti-inflammatory
- Respiratory support
- Genitourinary support

MEDICINAL USES

Rather than working through the different body systems that nettle can act upon, let's look at the individual plant parts (root, leaf, seed), since they differ in usage.

Root. As a good aquaretic and vulnerary for the urinary tract, nettle root is useful in formulas for UTIs and urinary stones. It is also anti-inflammatory, which makes it a superlative herb for benign prostatic hypertrophy (BPH) and the associated inflammation to the urinary tract. The root has been shown to increase kidney function (specifically the glomerular filtration rate) and is useful in kidney-support formulas for conditions ranging from acute infectious disease to chronic kidney disorders.

Leaf. Nettle has a long history of addressing nutritional deficiencies, anemia, metabolic and hepatic disorders, insufficient lactation, thyroid deficiencies, and more. I have used the leaf with success in clinics in Nicaragua, for example, where we see many cases of malnourished mothers with several young children, including a nursing infant. These women are usually mildly anemic, are losing hair, have scanty or no menses, feel chronically fatigued, and easily become sick.

Nettle leaf is also extremely useful in the case of allergies, especially with respiratory symptoms, as an anti-inflammatory and decongestant. For hay fever due to high pollen counts, it formulates well with butterbur (*Petasites hybridus*) and licorice (*Glycyrrhiza glabra*) root.

Seed. Like the root, nettle seed is restorative for the kidney and genitourinary tract. The seed is also useful for hypothyroid conditions. It may stimulate and normalize some thyroid functions, especially in regard to autoimmune conditions.

PREPARATION AND DOSAGE

Nettle root can be infused, decocted, or tinctured (in about 40 percent ABV alcohol). The dried root works just as well as the fresh one, in my opinion. The root (rhizome) is best harvested in the second year, in my experience; it is very medicinal at that point but then starts to be become tougher and woody.

Adult tincture dosage (root): ½–2 teaspoons of 1:4 tincture, 1–5 times per day

Nettle leaf is best harvested fresh (springtime is best) and either juiced or extracted multifractionally (using 40 percent or less ABV alcohol). Juicing the aerial parts and adding enough alcohol to make up 20 percent of the total volume is a fast home-preparation method for longer-term storage. You can also freeze the juice in ice cube trays.

For a multifractional extraction, I prefer a three-stage process: I soak the fresh leaves in apple cider vinegar (just enough to supersaturate them) for about 24 hours and then strain thoroughly. Then I decoct the marc in a mixture of water, honey, and glycerin over low heat for about 3 hours, using enough water to make up 25 percent of the final product and enough honey and glycerin to make up 20 percent each. Then I strain the marc and use it in a percolation tincture with 95 percent ABV alcohol, using enough to give the finished extract (combining the vinegar, infusion, and tincture) an alcohol content of 25 percent.

Dried nettle leaf is less potent than fresh as an anti-inflammatory, but it is still a nourishing, restorative herb. Infusion or tincture with about 40 percent ABV alcohol are both effective. If you're buying it in capsules or bulk, look for a freeze-dried product, as this will give you the closest medicinal analog to the fresh leaf for its anti-inflammatory properties.

Nettle leaf tincture can be added to oils, salves, poultices, and plasters for external use.

Adult tincture OR MULTIFRACTIONAL EXTRACT dosage (leaf): 1–2 teaspoons, 1–4 times per day

Nettle seed can be infused, decocted, or tinctured (in about 40 percent ABV alcohol), dried or fresh. The fresh seed can be very stimulating, so dried is usually preferred.

Adult tincture dosage (seed): ½–2 teaspoons of 1:4 tincture, 1–3 times per day

OREGON GRAPE

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Mountain holly	*Mahonia* spp. (syn. *Berberis* spp.)	Berberidaceae

There are many different species of Oregon grape in the wild, and as far as I know, they are medicinally analogous. I have used only the *Mahonia aquifolium*, *M. repens*, and *M. bealei* species.

PARTS USED | **ROOT, STEM, LEAF**

MAIN ACTIONS

- Liver decongestant
- Anti-infective
- Reduces skin inflammation

MEDICINAL USES

Rather than working through the different body systems that Oregon grape can act upon, let's look at the individual plant parts (root, stem, leaf), since they differ in usage.

Root and stem. Oregon grape root and stem are competent liver decongestants that are most indicated for autoinflammatory skin issues such as eczema, acne, and psoriasis. They are also useful for dyspepsia and for poor digestion of proteins and fats and the related cascade of digestive issues. They can help regulate blood sugar, especially when taken about 30 minutes before each meal.

The root contains berberine, though arguably less than is found in goldenseal (*Hydrastis canadensis*), Chinese coptis *(Coptis chinensis*), and barberry plants such as algerita (*Berberis trifoliolata*). It is extremely useful as an anti-infective in a formula for upper respiratory infections, especially gram-positive ones such as strep throat, as well as bacterial skin infections. The root and stem are also antifungal, whether used internally for candidiasis or externally for ringworm.

Leaf. The dried leaf is a decent healing addition to a wound powder formula as it contains varying amounts of berberine, depending on the species. The leaf also contains 5'-methoxyhydnocarpin (MHC) and is useful as an adjunct antibacterial, in particular for MRSA and staphylococcus infections.

This is a good reason to formulate Oregon grape root, stem, and leaf together for staph or MRSA infections. MHC has been found to inhibit the NorA efflux pump, a mechanism by which

some bacterial cells, and MRSA in particular, resist antibiotic treatment. The root contains the antibacterial constituents and the leaf contains the compounds that prevent the bacteria from pushing the root's constituents out, thereby making the overall effectiveness of the root far greater.

PREPARATION AND DOSAGE

Berberine is far more soluble in water than alcohol. It is also very bitter, which can make an infusion or decoction hard to ingest. Tincture the fresh or dried root and stem in a low-percentage alcohol (about 30 percent ABV) for best results. Oregon grape can also be powdered and encapsulated, or it can be applied as an oil, salve, poultice, or plaster.

Oregon grape leaf can be tinctured in 30 percent ABV alcohol and then mixed with the root and stem tincture to treat infection, or it can be dried and applied externally as a poultice or plaster.

Adult tincture dosage (root, stem, and/or leaf): ½–1 teaspoon of 1:4 tincture, 1–3 times per day

CAUTIONS/CONTRAINDICATIONS

Avoid Oregon grape during pregnancy. Its constituent berberine can lower blood sugar and blood pressure.

PARSLEY

BOTANICAL NAME:	FAMILY:
Petroselinum crispum	Apiaceae

Parsley has a long history as a kitchen herb. The leaf, though tasty and nourishing, has little medicinal value. The root and seed, however, have several uses, though each affects the body differently.

PARTS USED | **ROOT, SEED**

MAIN ACTIONS

- Restorative
- Aquaretic
- Promotes menstruation and lactation

MEDICINAL USES

Rather than working through the different body systems that parsley can act upon, let's look at the individual plant parts (root, seed), since they differ in usage.

Root. The root is a restorative that also encourages urination (aquaresis), menstruation, and lactation. It is a powerfully nourishing herb in the case of anemia and fatigue, and it also

nourishes the liver, promoting detoxification. It is an excellent addition to formulas to resolve UTIs, kidney stones, and gout.

The root is also a tissue healer, particularly for recovery and faster healing of bone fractures, and works well in a formula with comfrey (*Symphytum officinale*) and horsetail (*Equisetum* spp.) for this purpose.

Seed. Parsley seed, which is high in essential oils, is an effective antispasmodic for smooth tissue, particularly in the genitourinary tract. It is useful in the case of UTIs, neurogenic bladder, bed-wetting, colitis, spasmodic and painful dysmenorrhea, and even high blood pressure.

Parsley seed fits well in a formula with nettle (*Urtica dioica*) root to resolve benign prostatic hypertrophy (BPH) and other prostate gland inflammation or infection. It is also more antimicrobial than the root; the essential oil is useful externally for head lice.

PREPARATION AND DOSAGE

Parsley root can be prepared dried or fresh. The fresh root contains a lot of water and can be juiced, with enough alcohol added to make up 20 percent of the total volume to preserve it, or it can be tinctured in a 1:1 ratio in 40 percent ABV alcohol. It can also be prepared by hot infusion, cold infusion, or decoction or dried, powdered, and encapsulated.

Adult tincture dosage (root): 1–2 teaspoons of 1:4 tincture, 1–3 times per day

Parsley seed can be prepared dried or fresh as an infusion, but tincturing (in about 40 percent alcohol) is the preferred method of extraction.

Adult tincture dosage (seed): ½–1 teaspoon of 1:4 tincture, 1–3 times per day

CAUTIONS/CONTRAINDICATIONS

Both the root and the seed of parsley are uterine stimulants and should be avoided during pregnancy.

PASSIONFLOWER

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Maypop, passiflora	*Passiflora incarnata*	Passifloraceae

Passionflower is a relaxing, calming herb that helps reduce anxiety and relieve insomnia.

PARTS USED | **AERIAL PARTS**

MAIN ACTIONS

- Nervine

- Mild analgesic
- Soporific

MEDICINAL USES

Nervine and soporific. Passionflower assists the body in relaxing and calming, which makes it useful for treating anxiety, nervous tension, PTSD-related anxiety, irritability, insomnia (especially related to nervousness or stress), ADHD, and high blood pressure that is related to anxiety or stress. As with most nervines, it works differently for different people. Some people are sensitive to and affected by it strongly, while other folks have to take higher dosages to achieve an effect.

Analgesic. Passionflower is also a mild analgesic, especially in relation to muscle spasms or tension, such as tension headaches or PMS pain. Externally, passionflower can be used to relieve minor pain from injuries or inflammation on the skin, such as burns, abscesses, and boils.

PREPARATION AND DOSAGE

The flower, leaf, and stem of the vine are harvested and used together in infusions, decoctions, syrups, and tinctures (using about 40 percent ABV alcohol). I prefer a tincture of the fresh plant. I almost always use it in a formula. It works well with herbs like hops (*Humulus lupulus*), skullcap (*Scutellaria lateriflora*), and wild lettuce (*Lactuca* spp.) to help relieve anxiety, insomnia, and minor pain.

Externally, passionflower can be used as a poultice or compress.

Adult tincture dosage: ½–1 teaspoon of 1:4 tincture, 1–5 times per day

CAUTIONS/CONTRAINDICATIONS

Passionflower is contraindicated during pregnancy. It is a very potent herb and I prefer to use it for only 2 to 3 weeks at a time, followed by a break of at least that same amount of time. Overdoses can cause nausea and vomiting. Anyone taking blood thinners or facing surgery within the next few weeks should avoid passionflower.

PLANTAIN

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Greater plantain, lanceleaf plantain	*Plantago* spp.	Plantaginaceae

Plantain leaf has a wide variety of applications and ranks high on the healing spectrum, while also having extremely low toxicity. In fact, it is edible, whether raw or cooked. It is an excellent

vulnerary, both on the skin and in the mucosa of the respiratory system, eyes (conjunctiva), and the gut and genitourinary tracts.

There are many species of plantain throughout the world, and as far as I know, they are medicinally analogous. The species most commonly used for medicine are *Plantago major* and *P. lanceolata*. I also use *P. rhodosperma*, which is native to my region.

PART USED | **LEAF**

MAIN ACTIONS

- Mucosal vulnerary
- Expectorant
- Upper respiratory support
- Anti-infective, drawing
- Urinary tract support

MEDICINAL USES

Mucosal vulnerary. Plantain's vulnerary properties make it useful internally for upper respiratory illness and injury, stomach ulcers, acid reflux, sore throat, unproductive coughs, and infections of the upper respiratory system, including the sinuses and throat. It is also a good relaxing expectorant. Thanks to those same anti-infective support and mucosal vulnerary properties, it is also useful for upper and lower UTIs.

Liver support. Plantain leaf is an excellent low-toxicity hepatosupportive herb that formulates well with other liver-supportive and liver-decongestive herbs, including blessed thistle (*Cnicus benedictus*), and Oregon grape (*Mahonia* spp.).

Wound and inflammation healing. Plantain is famous for relieving insect and animal stings and bites. It works extremely well in salve formulas with anti-inflammatory herbs like gumweed (*Grindelia* spp.) for poison ivy or oak relief. It is also superlative in wound or burn formulas to help repair damaged tissue. It is an excellent drawing herb for toxins and general infections such as abscesses, infected splinters, and so on. The fresh leaf can be crushed or chewed until it starts to release juice (or a little water can be added) and placed onto a sting or bite for quick relief. (The concept of a "spit poultice" or "bolus" is well known, and will work fine as long as you're not placing it on an open wound.)

Ear infections. Calling on the same drawing tendencies that make it useful for treating abscesses, plantain can be applied topically, as an oil or an extract, to help soften and relieve congestion in the ears in cases of middle or inner ear congestion or infection. Taking plantain internally at the same time, by gargling or as a neti pot rinse, can assist in softening the surrounding tissue and pulling congestion out of the eustachian tube.

SPECIAL NOTES

Plantain has three well-known constituents—aucubin, baicalin, and allantoin. Studying them is a good way to learn the highlights of usage for this herb.

Aucubin is hepatoprotective, on par with or even superior to silybin (see the profile of milk thistle) in helping the liver and body respond to and recover from toxins.

Baicalin prevents bacteria from being able to cross-communicate and form biofilms. It makes plantain an excellent adjuvant in formulas for bacterial infections, in particular staph and strep bacteria. (See also Baikal skullcap Special Notes.)

Allantoin is a powerful vulnerary and tissue proliferant, primarily through its structural support and hydration of the extracellular matrix, which provides nourishment and structure to skin and connective tissue.

PREPARATION AND DOSAGE

Plantain leaf can be used fresh or dried, though the fresh herb is a much more powerful mucosal vulnerary than the dried form. Either way, the leaf can be infused, decocted, tinctured (in about 40 percent ABV alcohol), powdered and encapsulated, infused into oil or salve, or used in a poultice or plaster.

Fresh plantain can be juiced; to stabilize precipitation and preserve the juice, add enough glycerin and alcohol to make up 20 percent (each) of the final total volume. (Ideally, the alcohol that you add would be a 95 percent ABV alcohol percolation of the fresh leaves.) You could also freeze the juice in ice cube trays.

For a multifractional extraction, soak the fresh leaf in apple cider vinegar (ACV), followed by a cold infusion, then a decoction with water, glycerin, and honey (optional), and finally

a percolation tincture. The ideal percentages I aim for are ACV (5–10 percent), glycerin (15–20 percent), honey (10–20 percent), alcohol (25–30 percent), and water (20–45 percent). As with any extract, the alcohol percentage should be at least 25 percent to provide shelf stability and long-term preservation.

Adult multifractional extract dosage: 1–2 teaspoons of 1:8 multifractional extract, 2 or 3 times per day

PLEURISY ROOT

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Butterfly weed	*Asclepias tuberosa*	Apocynaceae

Pleurisy root is not only an incredible medicinal perennial with many important properties, but also a great pollinator plant for any garden. It is well known as a favorite host plant for monarch butterflies and will grow just about anywhere in North America.

PART USED | **ROOT**

MAIN ACTIONS

- Relaxing expectorant and anti-inflammatory
- Eliminative

- Mild lymph mover
- Anti-infective
- Gut astringent and bitter

MEDICINAL USES

As the name indicates, pleurisy root is best known for its effects on the respiratory tract. It has a history of being used for lower respiratory tract infections (i.e., pleurisy, a.k.a. pleuritis).

Respiratory support. This is one of the best, if not the best, relaxing expectorants growing in North America; it also supports and increases lymph and immune system response in the respiratory tract. Pleurisy root works especially well for dry, hacking coughs that are often found near the start of an upper respiratory infection from a cold or flu, or acute asthma attacks. However, it is also the first herb I usually consider to use for any lower respiratory tract infections such as pleuritis or even pneumonia, including bacterial infections. While pleurisy root has some direct antibacterial effects, its indirect effects on respiratory tissue, lymph, and immune support make it a very powerful indirect antibacterial respiratory medicinal plant. This herb can be combined very effectively with other respiratory support herbs like gumweed (*Grindelia* spp.), thyme (*Thymus vulgaris*), and yerba santa (*Eriodictyon californicum*) for an excellent respiratory formula for both upper and lower respiratory tract infections as well as chronic respiratory inflammatory conditions such as asthma and COPD.

Digestive support. Pleurisy root works well as an astringent and anti-inflammatory for gut inflammation such as stomach flu or diarrhea of unknown origin. It is also a digestive bitter that improves digestion and appetite.

Eliminative. Pleurisy root's action as a diaphoretic and aquaretic allows it to be of great assistance for colds and flus, especially with fever involved.

SPECIAL NOTES

Pleurisy root is an ideal herb for formulations to support the respiratory tract for a COVID-19 infection. Its anti-inflammatory and eliminative properties, combined with relaxing expectoration and eliminative properties, make it an herb that should be near the top of the list for anyone looking to herbal support for this coronavirus infection.

PREPARATION AND TINCTURE DOSAGE

Pleurisy root is bitter and although it can be prepared as an infusion or decoction, it is probably best taken as a tincture or even glycerite. I prefer to percolate the dried root as a tincture with about 50 percent ABV alcohol. Drinking it hot will help if the goal is diaphoresis, so in that case you can put the tincture dosage into a cup of hot tea or just hot water. Especially for lower respiratory tract support, this herb can be administered as a steam inhalation or a nebulizer. For upper airway and sinus congestion it can be administered via nasal atomizer.

Adult tincture dosage: ½–1 teaspoon of 1:4 tincture, 1–5 times per day

CAUTIONS/CONTRAINDICATIONS

This is a medium-toxicity plant and I prefer not to use it for more than 3 or 4 weeks without a break of equivalent time. It can be a uterine stimulant and is contraindicated during pregnancy.

POKE

OTHER COMMON NAMES:	**BOTANICAL NAME:**	**FAMILY:**
Pokeweed, Virginia pokeweed, pokeroot	*Phytolacca americana*	Phytolaccaceae

Young poke root salad ("poke salat") is a Southern staple but requires special preparation and leaching because this plant is extremely toxic. Used correctly and with care, it is an amazing medicinal. Poke root is best known as a lymph mover. In this regard, it is detoxifying and anti-infective.

PARTS USED | **ROOT, LEAF, BERRY**

MAIN ACTIONS

- Lymph and immune system stimulant
- Anti-infective
- Wound healer (leaf)

MEDICINAL USES

Lymph stimulation. Poke root's ability to move lymph makes it effective in formulas designed to stimulate the immune system right before or at the onset of illness, especially viral illnesses. It is also excellent for cases of lymph edema and stagnation, such as lymphadenitis, fibrocystic breasts, and firm or hard lymph glands. It can be applied topically around swollen lymph glands, in small amounts to unbroken skin, for the purpose of lymph movement.

Wound healing. Poke leaf (not the root) is an excellent wound healer when dried and applied externally as a poultice, preferably in a formula with other wound-healing herbs like echinacea (*Echinacea* spp.), black walnut (*Juglans* spp.) leaf, yarrow (*Achillea millefolium*), and plantain (*Plantago* spp.).

Though I don't have studies to point to, I think that the leaf works in this manner by increasing the local white blood cell count and other immune activity. Do *not* apply the root topically to a wound or to any mucous membranes; it is far too irritating.

Poke root is also a detoxifier and anti-infective when taken internally. I use it (in formulas) internally to help stimulate the lymph movement that cleans and detoxifies a wound after an injury or surgery.

SPECIAL NOTES

Using the berry. The berry has the same lymph-moving effect, but I don't normally prepare the berry as medicine. When it is in season, I might crush a fresh berry or two gently in my mouth, spit out the seeds (the seeds are very toxic and should never be eaten), swallow a little bit of the juice, and spit out the pulp. This is a quick way to get lymph movement if the berries are in season and you are very careful.

Antiviral proteins. Poke leaf contains two proteins — pokeweed antiviral protein (PAP) and pokeweed antifungal protein (PAFP) — that have been studied in vitro for their efficacy against herpes-family viruses, HIV, some types of cancer, and fungal infections. I do not know of any human testing, but there are interesting case studies in Japan and China using poke for viral infections that have had positive outcomes. This may be something to continue to pay attention to.

PREPARATION AND DOSAGE

The root is more commonly used than the leaf or berry and, if poke doesn't grow in your region, may be the only plant part you have access to. Handle the root with care, especially if harvesting and cutting it. Wearing gloves is a good idea. I have felt nauseated and ill after working with fresh poke root without gloves for a few hours, probably from so much contact with my skin.

Poke root and leaf should be dried before use; in my opinion, they are too toxic when used fresh. The dried root can be

prepared by infusion, or it can be powdered and encapsulated if necessary, but a tincture (in about 40 percent ABV alcohol) is by far the most consistent, safe, and reliable extraction. Poke root can also be infused into oil for topical application.

Adult tincture dosage: 5–20 drops of 1:4 tincture, no more than twice per day. Do not exceed 2 teaspoons over the course of 1 week. It is always far preferable to administer poke in a formula and not as a simple. Cut the dosage at least in half, or discontinue altogether if it is causing nausea.

CAUTIONS/CONTRAINDICATIONS

Poke root is toxic in medium to large doses and will cause nausea and vomiting or worse. For the vast majority of conditions that would be helped by poke root, there is no reason to take it by itself. Even in a formula, it should never be taken for more than 2 to 3 weeks at a time without a break of at least that long in between. Poke root should not be taken during pregnancy or while breastfeeding.

PRICKLY ASH

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
	Zanthoxylum spp. (including *Z.*	Rutaceae

Toothache tree, tickle tongue, Hercules club	*hirsutum*, *Z. americanum*, and *Z. clava-herculis*)	

This heating herb has profound effects on many levels. In particular, it stimulates microcirculation, making it a superb carrier herb for delivering constituents of a formula to tissue.

PARTS USED | **BARK, ROOT BARK, BERRY, LEAF (IN SOME SPECIES)**

MAIN ACTIONS

- Stimulates circulation
- Anti-infective
- Immune system stimulant

MEDICINAL USES

Prickly ash is known as “toothache tree” or “tickle tongue” because of its tingling and numbing effect (produced primarily by the compound herculin) on the gums and in the mouth, which makes it a decent folk remedy for toothaches. More importantly, this herb stimulates microcirculation in tissue and moves constituents (its own and others in a formula) throughout the mucosa. This makes it handy for issues such as local infection, where it acts to detoxify and irrigate the infected area and increase tissue perfusion and proliferation.

Colds and flu. In addition to its general anti-infective properties (against viruses, bacteria, and parasites) and its ability to stimulate the immune system, prickly ash is an excellent herb to use at the onset of or upon exposure to colds, flu, or general upper respiratory virus. As a heating and diaphoretic herb, prickly ash helps open skin eliminative channels.

Other internal uses. Prickly ash is useful in formulas for bacterial infections of the mouth, throat, sinuses, or elsewhere in the upper respiratory tract. It not only boosts circulation and moves lymph but also is an aquaretic, an emmenagogue, and a digestive stimulant and anti-infective. It has been used traditionally in antibacterial and anthelmintic formulas for alimentary tract infections (e.g., cholera, dysentery, irritable bowel syndrome, and roundworms).

Analgesic. Externally, prickly ash has an analgesic effect on the neuromuscular system, especially for chronic pain such as osteoarthritis and rheumatoid arthritis, lower back pain, and musculoskeletal injury. It warms and dilates (as a counterirritant) distal blood vessels, which makes it a fantastic carrier herb and an ideal ingredient in formulas for sprains, strains, contusions, and other soft tissue injuries.

PREPARATION AND DOSAGE

Prickly ash bark, root bark (discard the interior portion), and berries can be used interchangeably. The leaves of *Zanthoxylum hirsutum* also have strong medicinal actions and can be used (though they are not as potent as the other parts of the plant).

All medicinal parts of the prickly ash tree can be prepared, fresh or dried, as infusions, decoctions, or tinctures (in about 50 percent ABV alcohol). Note that the fresh plant can become extremely mucilaginous, particularly in water extracts. While that isn't necessarily a bad thing, it can become too goopy to use. I recommend drying these plant parts before preparing them.

Dried prickly ash can also be applied as a poultice or plaster, infused in an oil or salve, or powdered and encapsulated. The fresh or dried plant material can be used as a plaster on the gums. Of all the methods of preparation, I prefer prickly ash as a percolation tincture of the dried plant parts.

Adult tincture dosage: ¼–1 teaspoon of 1:4 tincture of the dried herb, 1–4 times per day

CAUTIONS/CONTRAINDICATIONS

Prickly ash should be used with caution during pregnancy as it has some uterine stimulant properties. As with any heating herb, it is important to watch for signs of too much heat. This is an energetic concept but is clearly apparent on a physical level — dry and cracked mucosa, thirst, flushed skin — if you are overdoing it.

PRICKLY PEAR

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Prickly pear cactus, nopal	*Opuntia* spp. (including *O. streptacantha*)	Cactaceae

Prickly pear flower is perhaps the best mucosal vulnerary in North America. The pad contains a gel similar to aloe vera. Although it can grow anywhere with enough sunlight, the plant grows much larger in warmer zones.

PARTS USED | **FLOWER, PAD**

MAIN ACTIONS

- Mucilaginous, mucosal support
- Healing; draws out infection

MEDICINAL USES

Mucosal restoration and support. The highly mucilaginous flowers and the inside portion of the pads are extremely useful in restoring and supporting the mucosa of the mouth, upper airway, and digestive and genitourinary tracts. The flower is best used for anything related to mucosa that needs healing from illness or injury, including sinus and upper respiratory infections, stomach ulcers, gastroesophageal reflux disease (GERD), diverticulitis, and UTIs.

Wound healing. The gooey inner part of the pad draws infection from wounds. It is an excellent remedy for first- and second-

degree burns, boils and abscesses, and even cellulitis. This inner "goop" can be scraped out and heated, or even heated inside the pad, and used as a warm poultice for infections, with dried or fresh herbs mixed in.

Diabetes support. Eating prickly pear pads to modulate type 2 diabetes has been a successful folk remedy in Mexico for generations, where the *nopalitos*, as they are called, are prepared with onions, garlic, and eggs, and so on. Its effectiveness probably lies in the pad's high content of inulin and the ability of this prebiotic to level the glycemic index of other foods being eaten at the same meal. The pads have also been shown to lower levels of free fatty acids in the gut, which is thought to have an effect on insulin sensitivity.

SPECIAL NOTES

CAUTION: Before preparing the pads, scrape them free of glochids — the hairlike, barbed needles on the pads. They can work their way under the skin and be very irritating for as long as several weeks. The most primitive method works the best: Place a pad on a large flat rock, hold it in place with a stick, and scrape off the glochids with a small flat rock. They can also be burned off in coals or with a small flame.

If you get any glochids in your skin, the best remedy is to immediately pull them out under good light using tweezers. The longer you wait, the further they will work their way in. Another option is to spread wood or craft glue on the area. Cover it with a strip of medical gauze and let dry for about 45 minutes, then pull it off and recheck your work with tweezers. Duct tape

doesn't work, in my experience. If you pull out the glochids as soon as you feel them, you will probably be okay.

PREPARATION AND DOSAGE

Prickly pear flower and pad, fresh or dried, can be prepared as a cold decoction, infused in honey, glycerin, oil, or salve, or made into lozenges or syrup. The fresh parts can be juiced or dried, powdered, and encapsulated. I generally use the flower as part of a base for a multifractional extract, soaking it in cold water for a few hours, usually along with other cold-infused herbs, like marshmallow (*Althaea officinalis*) root and licorice (*Glycyrrhiza glabra*) root, before straining and setting aside, then decocting the marc.

Powdered prickly pear is amazingly convenient; you can reconstitute it with water to the consistency you prefer as needed. To dry the pad for powder, scrape out the goo and place it in a food dehydrator set to a low temperature. Aloe (*Aloe vera*) doesn't stand up to the same treatment.

The dried petals are somewhat sweet and have a consistency between gummy bear candies and fruit leather. The fruits (called *tunas*) are delicious and very nutrient-dense. They can be juiced, made into syrup, or dried for fruit leather and so on.

Adult dosage: Use prickly pear as needed. It is hard to overdo the dosage, within the limits of common sense. A ballpark dosage of prickly pear flower would be one petal, equal to maybe ½ teaspoon when dried and powdered, every hour or two.

CAUTIONS/CONTRAINDICATIONS

Very rarely, a person may have a sensitivity to prickly pear that causes digestive upset, nausea, diarrhea, and vomiting. Eating too much of the raw pad can cause digestive upset in anyone who is not used to it.

RED ROOT

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
New Jersey tea	*Ceanothus* spp. (including *C. americanus*)	Rhamnaceae

Red root includes several *Ceanothus* species that can be thought of as combining the properties of astringency and decongestion. This expresses itself in an interesting combination of physiological healing effects from cellular to tissue to organs and organ systems.

PARTS USED | **ROOT, STEM BARK**

MAIN ACTIONS

- Lymph stimulant, immune support
- Astringent
- Liver decongestant

- Respiratory decongestant, bronchodilator

MEDICINAL USES

Immune and lymph support. Used internally or externally, red root is a lymph mover and immune stimulant. It is highly astringent and works well for internal and external bleeding. It also acts as a liver and portal vein decongestant, as well as a respiratory decongestant and bronchodilator, which is helpful for chronic respiratory illnesses like asthma and bronchitis.

Red root may also have a supportive effect on the spleen, again as part of the support for the immune system that it lends the body.

Anti-infective uses. I use this plant in wound powders and tooth powders both for its anti-inflammatory and immune-stimulant properties as well as for its astringency and toning effect on the gums. It could also be used as a contact anti-infective anywhere on the mucosa (e.g., as a lozenge or spray to treat strep throat).

SPECIAL NOTES

One of red root's primary decongestant effects on the blood may be attributed to its ability to affect the charge of red blood cells (RBCs), according to the late, great herbalist Michael Moore. RBCs can have a tendency to stack or clump (a condition termed *rouleaux*) perhaps because of an autoimmune response, sometimes as a result of lifestyle and nutrition, or even as a natural result of a heavy meal and resulting high amounts of fat

chylomicrons in the blood. Red root may exhibit (among other things) an electrical effect on the charge of the surface of RBCs that causes them to repel each other more freely and clump less, thereby increasing the permeability of capillary walls and improving the flow of the portion of blood that becomes lymph.

PREPARATION AND DOSAGE

Traditionally, the root, with bark intact, is used. However, some herbalists use the bark of the stems, which is considered as effective and can be harvested without killing the plant by pruning off branches. The root can be used fresh or dried as a tincture or decoction, or powdered (it requires a heavy-duty grinder) and encapsulated, or as a poultice or plaster.

Tincture

A tincture of fresh red root is more potent than a tincture of the dried root, particularly for internal use. Use 60 to 80 percent ABV alcohol for tincturing.

Adult tincture dosage: ½–1 teaspoon of 1:4 tincture, 1–3 times per day

CAUTIONS/CONTRAINDICATIONS

Used alone as a lymph mover, red root may be best suited to relieving chronic stagnation that involves liver, blood, and lymph stagnation. In cases of acute lymphadenopathy and

swelling, its astringency could exacerbate the swelling. However, I almost always use it in lymph formulas and have never had any problems, especially when it's cushioned by other gentle liver decongestants such as burdock (*Arctium lappa*) root and less astringent lymph movers such as poke (*Phytolacca americana*) root.

ROSEMARY

BOTANICAL NAME:	FAMILY:

Rosmarinus officinalis	Lamiaceae

Rosemary exerts influence on a number of organ systems and physiological processes. Like most warming herbs, it is a carrier, meaning it increases distal (peripheral) circulation.

PART USED | **LEAF**

MAIN ACTIONS

- Stimulates and calms the mind
- Anti-inflammatory
- Antibacterial
- Emmenagogue

MEDICINAL USES

Emotional/mental support. Rosemary might be termed a "mental nervine." Rosmarinic acid, one of its constituents, metabolizes and follows several pathways throughout the body, including one across the blood-brain barrier, and the effect follows on adrenoreceptor systems that play a role in depression. Most people report that rosemary helps them feel more focused, less depressed, and better able to concentrate.

Rosemary also has a direct protective, antioxidant effect on neurons, counteracting the oxidative stress that plays a role in neurodegenerative disease processes like Alzheimer's, Huntington's, and Parkinson's. For this purpose, rosemary is

particularly effective when administered intranasally via any of the mechanisms discussed here.

Anti-inflammatory. Rosemary traditionally has been used to protect the cardiovascular and circulatory system, thanks to its anti-inflammatory characteristics as well as its free-radical scavenging capabilities.

Other uses. Rosemary is moderately antibacterial, particularly against *E. coli*, which makes it useful in formulas for UTIs. I use it in respiratory formulas when I want a heating, diaphoretic expectorant. It is also warming to the digestive system, promoting bile flow and assisting digestion. Rosemary can stimulate menstruation and assist flow in the case of painful menstruation with weak or scanty blood flow.

Rosemary is a good cold and flu herb because of its eliminative and heating properties. Many patients have found it helpful when taken as a steam inhalation for COVID-19 symptoms.

PREPARATION AND DOSAGE

Rosemary leaves can be prepared dried or fresh as an infusion, tincture (in about 40 percent ABV alcohol), infused oil or salve, or poultice or plaster. The dried leaves can be powdered and encapsulated. Rosemary is ideally administered orally as a tea or tincture or intranasally as nasya oil or via a neti pot or nasal atomizer.

Adult tincture dosage: ½–1 teaspoon of 1:4 tincture, 1–5 times per day

CAUTIONS/CONTRAINDICATIONS

Use rosemary with caution during pregnancy because of its uterine stimulant properties.

SAINT JOHN'S WORT

BOTANICAL NAME:	**FAMILY:**
Hypericum perforatum	Lamiaceae

Saint John's wort is well known as an herbal antidepressant. Though its reputation may be exaggerated, it can be an effective mood elevator. It also has pain relief properties.

PARTS USED | **AERIAL PARTS, ESPECIALLY THE FLOWER**

MAIN ACTIONS

- Nervine, mood elevator
- Analgesic
- Nerve tissue and myelin sheath support
- Wound healing (especially for burns)

MEDICINAL USES

Depression. As is the case for all nervines, results with this herb vary greatly from person to person. The root causes of depression are too numerous and complex to assume that one herb can be a panacea. Saint John's wort sometimes must be used for several weeks, or even months, before patients feel the effect. I have found that administration as a nasya oil or through nasal atomization may increase its efficacy.

Saint John's wort can be an effective mood elevator for many people, and perhaps in a related way it is a competent pain reliever, both when taken internally and when applied externally. It can help people in shock after trauma feel calm and focused, especially taken together with another nervine such as skullcap (*Scutellaria lateriflora*).

Pain relief. As a mild spasmolytic, Saint John's wort is useful for spasmodic pain resulting from injury or nerve damage, and throughout the smooth muscle and mucosa of the body, including the respiratory tract (asthma, chronic bronchitis with unproductive cough), urinary tract (neurogenic bladder), digestive tract (anxiety-related dyspepsia, digestive colic, IBS), and circulatory system (hypertension). Additionally, Saint John's wort is a good anti-inflammatory, both externally and internally.

Wound healer. Saint John's wort is an effective wound healer, especially for burns and ulcerated wounds.

Nerve tissue support. Saint John's wort supports nerve tissue, in particular the myelin sheath around nerve tissue. Among other uses, this makes it a great herb for formulas to help the body deal with herpes family viruses and nerve damage. Applied intranasally, such as in a nasya oil, many of its active constituents can cross the blood-brain barrier and address nerve damage and inflammation in the brain.

SPECIAL NOTES

Hypericin and hyperforin, two of the best known and most studied constituents in Saint John's wort, have been found to have antiviral and antibacterial properties as well as affecting dopamine levels.

PREPARATION AND DOSAGE

The aerial parts of the plant, harvested when the plant is in flower, are much more potent when fresh than when dried. They can be prepared as an infusion, decoction, or tincture (using 40 percent ABV alcohol). One of the most effective preparations of this herb is to juice the plant and add 20 percent alcohol by volume to preserve it. For external use, it can also be infused in oils or salves or used in poultices, plasters, or compresses.

Adult tincture dosage: ½–1 teaspoon of 1:4 tincture, 1–4 times per day

CAUTIONS/CONTRAINDICATIONS

Saint John's wort should not be taken in combination with any medications without consulting a physician, as it can alter the efficacy of many pharmaceuticals. This includes antidepressants, birth control pills, and many others.

SELF-HEAL

OTHER COMMON NAMES:	**BOTANICAL NAME:**	**FAMILY:**
Self-heal spike, heal-all, woundwort	*Prunella vulgaris*	Lamiaceae

Self-heal offers a wide range of uses that support perfusion and the cardiovascular system in and around injured and inflamed tissue. It is used in Traditional Chinese Medicine as well as in Western herbalism.

PARTS USED | **AERIAL PARTS (ESPECIALLY THE FLOWER SPIKE)**

MAIN ACTIONS

- Tissue and wound healing
- Anti-infective, antiviral
- Anti-inflammatory

MEDICINAL USES

Wound healing. Self-heal lives up to its name in regard to wound healing. It stimulates the balanced production of nitric oxide (NO) and endothelial nitric oxide synthase (eNOS), the enzyme responsible for this production, with the effect of normalizing and reducing inflammation while stimulating vasodilation and protecting blood vessels from platelet aggregation and adhesion.

This, in turn, increases microcirculation to injured tissue, which reduces opportunities for infectious pathogens. The outcome is faster healing, less inflammation and pain, less likelihood of infection, and less scar tissue.

Viral infections. Self-heal is a useful anti-infective for colds, flu, and herpes family viruses like shingles, HSV-1, and HSV-2. In cold and flu formulas, it functions to soothe inflammation of the nose, throat, and eyes and pairs well with strong eliminative herbs like yarrow (*Achillea millefolium*), elder (*Sambucus* spp.), and prickly ash (*Zanthoxylum* spp.). In formulas for herpes family viruses, it combines well with other antivirals like chaparral (*Larrea* spp.) and feverfew (*Tanacetum parthenium*), and it makes a great antiviral eyewash.

Inflammation. Self-heal soothes and normalizes inflammation processes in the mucosa and skin. A self-heal bath can help the body soothe the symptomatic flare-ups of chronic inflammation syndromes such as eczema. A topical application can help reduce the itching of poison oak or ivy.

Blood pressure and blood sugar. As a cardiovascular tonic and support herb, self-heal can help in formulas to lower hypertension and support the health of blood vessels. Additionally, self-heal can help stabilize blood glucose levels.

PREPARATION AND DOSAGE

Self-heal can be taken internally as well as applied to a wound externally. The aerial parts can be prepared, dried or fresh, as an infusion, a tincture (in about 40 percent ABV alcohol), an infused oil or salve, or a poultice or plaster. The dried plant can also be powdered and encapsulated.

Adult tincture dosage: 1–2 teaspoons of 1:4 dried tincture or 1:2 fresh tincture, 1–3 times per day

CAUTIONS/CONTRAINDICATIONS

Self-heal can lower blood sugar, so use it with caution if you are taking diabetic medications.

SIDA

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Wireweed, morning mallow, common fanpetals	*Sida* spp.	Malvaceae

Sida combines the mucosal vulnerary attributes that the mallow family is known for with antimicrobial advantages that most other mallows do not have.

PARTS USED | **AERIAL PARTS**

MAIN ACTIONS

- Mucosal vulnerary
- Antibacterial

MEDICINAL USES

Sida's wonderful mucosal restorative properties are readily apparent when it is used to treat sinus, throat, or mouth infections and other upper respiratory issues, such as sore throat, bronchitis, and dry, unproductive coughs. It is a potent antibacterial and useful in general wide-spectrum antibacterial formulas, whether for upper respiratory, gut, or urinary tract infections or for Lyme-related infections, as outlined by Stephen Buhner in his Lyme disease treatment protocols and books.

I have also used sida for viral upper respiratory infections, in particular strep throat, with great success. Additionally, it can help the body overcome chronic sinus infections when used intranasally via a neti pot or nasal atomizer.

PREPARATION AND DOSAGE

I prefer to use just the aerial parts of this herb, as the roots of some species can contain small amounts of ephedrine. The plant, dried or fresh, can be prepared as an infusion, decoction, syrup, lozenge, tincture, multifractional extract (final value should be 25 to 30 percent ABV), oil, salve, poultice, or plaster. The dried flowers can be powdered and encapsulated. (This plant can be hard to find online except as a prepared tincture, but it can be wildcrafted in many areas.)

Multifractional Extract

This herb is best prepared as a multifractional extract: first a cold-water infusion for 30 to 60 minutes, shaking or stirring

frequently; then a decoction in water, adding enough glycerin to make up 20 percent of the final extract's volume, and also, because sida extracts better in an acidic solvent, adding enough apple cider vinegar to make up 5 to 10 percent of the decoction liquid; and finally a percolation tincture in 95 percent ABV alcohol, using enough to make up 25 to 30 percent of the final volume.

Adult tincture or multifractional extract dosage: ½–1 teaspoon of 1:3 tincture or 1:8 multifractional extract, 3 or 4 times per day

CAUTIONS/CONTRAINDICATIONS

An overdose of sida can cause nausea.

SKULLCAP

BOTANICAL NAME:	**FAMILY:**
Scutellaria lateriflora	Lamiaceae

Skullcap is one of the most well-known and consistently effective nervines that any herbalist can have in their materia medica. It is calming and anxiolytic without necessarily causing drowsiness.

PARTS USED | **AERIAL PARTS, ROOT**

MAIN ACTIONS

- Nervine
- Analgesic
- Adaptogenic
- Antibacterial (root)

MEDICINAL USES

Nervine. Skullcap is a restorative for the nervous system while also promoting a focused and relaxed state. It is one of my first choices for mild psychogenic shock and pain from an injury, as well as nerve pain. It is also useful in helping the body cope with neurasthenia (nervous exhaustion). I like to use skullcap and eleuthero (*Eleutherococcus senticosus*) together for, among many other things, helping people recover from addictions, whether psychological or physical in nature.

In addition to its effects on the nervous system, skullcap is tonifying and relaxing to the musculoskeletal system (including musculoskeletal pain), circulatory system (making it useful for hypertension and angina pectoris), and the respiratory system (calming spasmodic asthma or spasmodic coughing).

Bacterial infection. Like Baikal skullcap (*Scutellaria baicalensis*), skullcap contains baicalin, which makes it a useful adjuvant or synergist in antibacterial herbal formulas. (See Baikal skullcap Special Notes for more on baicalin.)

SPECIAL NOTES

Unfortunately, commercial skullcap is often adulterated with different Germander species (*Teucrium* spp.), which can be toxic to the liver. It is important to be familiar with the taste and feel of this plant when it is potent (fresh or freshly dried). When buying skullcap, know your source, particularly if you are purchasing it online.

PREPARATION AND TINCTURE DOSAGE

Skullcap's aerial parts are most typically used as medicine. Fresh or dried, they can be prepared as an infusion, decoction, or tincture (using 50 percent ABV alcohol for the fresh plant, or 40 percent ABV for the dried plant).

This herb does not remain potent for long in dried form; it should be tinctured fresh or used within 6 months after being dried. Powdering and encapsulating is not recommended if the capsules are going to sit around on a shelf for longer than that.

The root can be used but is not easily available unless you grow or wildcraft this herb. It should be tinctured, whether fresh or dried, in at least 80 percent ABV alcohol.

Adult tincture dosage: ½–2 teaspoons of 1:4 tincture, 1–4 times per day

CAUTIONS/CONTRAINDICATIONS

Skullcap root (not the aerial parts) should be used with caution during pregnancy. If you can't grow your own, be very sure of your sources when buying this herb (see Special Notes).

SWEET ANNIE

OTHER COMMON NAMES:	**BOTANICAL NAME:**	**FAMILY:**
Sweet wormwood, qing hao	*Artemisia annua*	Asteraceae

Sweet Annie has been used in Traditional Chinese Medicine for probably thousands of years. More recently, it has been studied in the West with a focus on its constituent artemisinin, which has long been used as an antimalarial and has shown some effectiveness in killing cancer cells.

PARTS USED | **AERIAL PARTS**

MAIN ACTIONS

- Antiviral
- Antiprotozoal
- Antibacterial
- Eliminative

MEDICINAL USES

Lyme disease. Well-known herbalist Stephen Buhner has talked extensively about the successful use of sweet Annie for Lyme disease and especially common Lyme coinfections, such as *Babesia* and *Bartonella* species of bacteria. One of the most interesting aspects of sweet Annie is its ability to cross the blood-brain barrier, which allows it to help the body cope with infections that have done the same. I have seen clients in late-stage Lyme with discernable mental effects, such as memory loss and loss of reading comprehension, begin to improve within days after adding sweet Annie to their protocols.

Other uses. Taken internally, sweet Annie is an effective antibacterial and febrifuge (fever reducer), making it a good addition to cold and flu remedies. It can also be used in steam inhalations for sinus infections, congested nasal passages, and upper and lower respiratory viral infections. Externally, sweet Annie is useful for tissue and wound healing and as an anti-infective.

SPECIAL NOTES

During the COVID-19 pandemic, the government of Madagascar created an herbal “anti-COVID” drink and passed it out to all citizens. The government claimed that it kept the number of serious and critical cases to extremely low numbers. The main ingredient (62 percent, according to the label) appears to have been sweet Annie.

PREPARATION AND DOSAGE

Artemisinin is not especially water soluble, so water-based formulas tend not to be potent. In addition, the herb is more toxic when fresh than when dried, so, unlike most herbs, sweet Annie is best prepared by being dried, powdered, and encapsulated. Tinctures can also be effective, but depending on the protocol, it may be necessary to take large doses. Sublingual dosing, steam inhalation, nebulizing, nasal atomization, and even nasya oil can all be effective administration routes for this herb, depending on the goals.

Tincture

A tincture of the dried plant prepared in about 60 percent ABV alcohol yields the highest overall levels of artemisinin and bioflavonoids.

Adult tincture dosage: ½–2 teaspoons of 1:4 tincture, 1–4 times per day. An even higher dosage than the high end of the range here may be necessary short term for treating Lyme disease and malaria; the protocol should be determined based upon a detailed interview, history, and physical exam.

CAUTIONS/CONTRAINDICATIONS

Sweet Annie is strongly contraindicated during pregnancy and while breastfeeding. With medium toxicity, this herb should be

taken only in formula and even then only for 2 to 6 weeks before taking a break for at least the same amount of time.

USNEA

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Old man's beard, beard lichen	*Usnea* spp. (including *U. barbata*, *U. diffracta*, and *U. longissima*)	Parmeliaceae

This interesting lichen provides potent medicine for treating bacterial infections, especially in the respiratory and urinary tracts.

PARTS USED | **WHOLE LICHEN**

MAIN ACTIONS

- Antibacterial, antifungal
- Immune support
- Aquaretic

MEDICINAL USES

Anti-infective and wound healing. Usnea is highly effective against bacteria, particularly gram-positive species (strep, staph, and probably *Mycobacterium tuberculosis*), and especially in the respiratory and urinary tracts. For UTIs, I prefer to formulate this herb with uva ursi (*Arctostaphylos uva-ursi*), bilberry (*Vaccinium myrtillus*) leaf, Baikal skullcap (*Scutellaria baicalensis*), and echinacea (*Echinacea* spp.).

Usnea is useful in and around skin and wound infections as a poultice, wash, or soak; for this purpose, I usually combine it with oak (*Quercus* spp.), pomegranate (*Punica granatum*) rind, chaparral (*Larrea* spp.), and echinacea (*Echinacea* spp.). On the skin, it is also a decent antifungal (e.g., for ringworm), especially when combined with neem (*Azadirachta indica*) and black walnut (*Juglans* spp.). Additionally, usnea is a vulnerary and stimulates tissue and wound healing.

Immune support and restorative. Usnea stimulates immunity and is a mild aquaretic, helping to drain toxins as they are broken down and excreted, which is always useful with lymph and immune stimulation. It is a nutritive and restorative herb not only in the sense of the immune modulation, but also as a neuroendocrine restorative for chronic conditions that create fatigue or weakness, perhaps as a result of convalescence. Like most restoratives, it also stimulates appetite and digestion.

Colds and flu. As a relaxing expectorant, usnea is useful in most, if not all, respiratory formulas.

PREPARATION AND DOSAGE

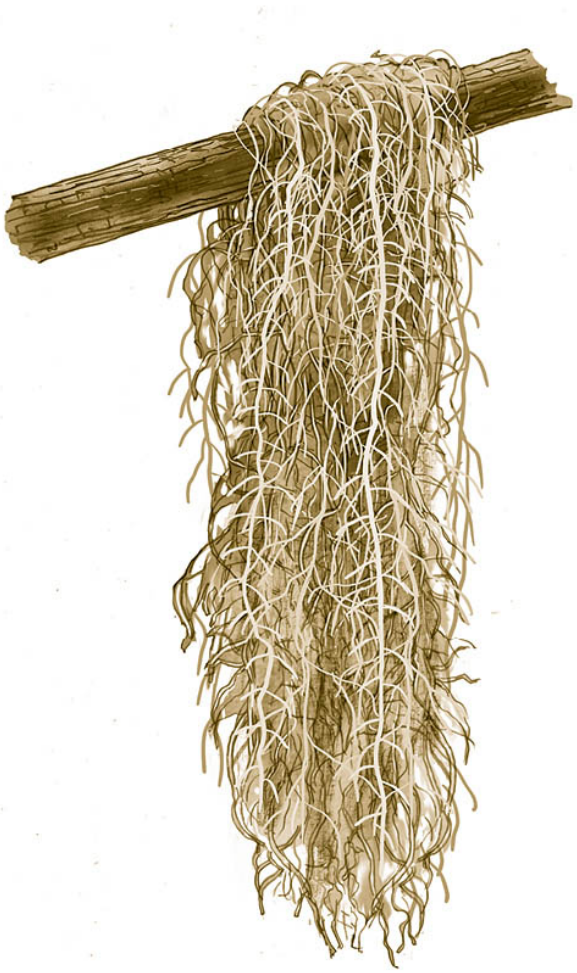
For topical use, usnea can be prepared as an oil or salve, a poultice, or a plaster. For medicinal effects, you have to expose the inside of the lichen. You can grind it with a sturdy grinder but chopping it into approximately 1-inch pieces is sufficient.

For internal use, you can prepare usnea, fresh or dried, as an infusion, but I have found that a multifractional extract, as outlined below, works best.

Adult multifractional extract dosage: ½–2 teaspoons of 1:8 multifractional extract, 1–5 times per day

CAUTIONS/CONTRAINDICATIONS

Usnea can build toxicity in the liver over time and should not be taken for longer than 3 to 4 weeks at a time without an equal period of rest.



USNEA MULTIFRACTIONAL EXTRACT

Lichens contain both algae and fungi; different constituents from each extract best using different methods. Usnic and barbatic acids extract best with high-percentage alcohol, while polysaccharides (likely the primary immune-modulating constituents) extract better with water. Other constituents extract better with heat in the case of the alcohol, while some water-soluble constituents extract

better as a cold infusion, and others do better as a decoction.

1. Prepare usnea as at least a 1:2 maceration tincture by volume (1 part usnea, 2 parts alcohol). For example, if your chopped, loosely packed usnea fills a mason jar to the 250 ml mark, add enough 90-plus percent ABV alcohol to fill the jar to the 500 ml mark.

   You can use more usnea to make it stronger but leave enough room for the solvent to move across the herb to pick up the constituents. There is a limit to how close to a 1:1 ratio you can get before reaching diminishing returns.

2. Heat it to between 90° and 110°F/32° and 43°C and keep it at that temperature for 3 to 4 weeks, shaking it a few times a day.

   I put mine in the attic, but you can wrap it in a heating pad or, climate permitting, put it in an opaque container, such as a heavy paper bag, to block the light and put it in the sun.

   Alternatively, you can heat it to a higher temperature for less time but be very aware of the danger of flammability. In a wet-bath canning setup, heating to about 160°F/71°C for 6 to 8 hours will suffice.

   Another option that is safer is a device like a Magic Butter Machine designed to heat solvents in a closed container with preset heat and time settings.

3. Strain the alcohol and discard the marc. Measure the amount (it should be 500 ml in this example) and put it aside.

4. Using about half the volume of water as the final yield of your tincture (250 ml here), soak a fresh batch of the same amount of usnea by volume (again, 250 ml) in room-temperature water in a pan for 30 to 60 minutes, using a 1:1 ratio by volume (1 part usnea, 1 part water), which will be pretty thick.

   Add to that infusion the same amount of glycerin as water to create a 50:50 water-glycerin mix so that you now have approximately 1 part usnea to 2 parts water-glycerin mix, or 500 ml of total water-glycerin mix with 250 ml of usnea.

   Note the level of the liquid in the pan. Now double the amount of fluid in the pan by adding in the same amount of water as water-glycerin mix (in this example, 500 ml). Bring the mixture to a low simmer and decoct for as long as it takes to evaporate off the amount you added (500 ml) and bring the level back to the original mark.

5. Take the mixture off the heat and let sit until cool enough to handle, then strain out the usnea.

6. Mix the decoction with the alcohol tincture. You'll end up with an extract that is roughly 50 percent alcohol, 25 percent glycerin, and 25 percent water, or in this

example, 500 ml alcohol, 250 ml glycerin and 250 ml water.

WHITE HOREHOUND

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Common horehound	*Marrubium vulgare*	Lamiaceae

White horehound is well known as a respiratory expectorant, while also being a gentle diaphoretic. It's useful for a variety of conditions.

PARTS USED | **AERIAL PARTS**

MAIN ACTIONS

- Expectorant
- Cardiovascular tonic
- Bitter digestive

MEDICINAL USES

Respiratory support. White horehound has long been used as a respiratory herb. You can buy horehound lozenges to this day (or

make your own, if you prefer). It serves well as both a relaxing and stimulating expectorant, whether for a dry, unproductive cough or for a very wet one. It works extremely well in helping the body deal with viral upper respiratory tract infections. The leaf, in particular, is restorative for mucous membranes.

Digestive support. Rather than being sweet, like many restoratives, white horehound is bitter in taste and in digestive effect. It stimulates salivation and digestion and is nutritive and restorative to the digestive system, making it useful for conditions such as dyspepsia, poor digestion, congested liver/bile, chronic fatigue, lack of appetite, and convalescence.

Cardiovascular support. White horehound is restorative to the heart and cardiovascular system and is useful for arrhythmia and palpitations, especially when they are anxiety related.

Tissue healing. The leaf of white horehound encourages soft tissue healing when applied externally; it's especially useful for lacerations, abrasions, and burns.

PREPARATION AND DOSAGE

Fresh or dried, white horehound can be prepared as an infusion, tincture (in about 40 percent ABV alcohol), decoction, syrup, lozenge, oil, salve, poultice, or plaster. The dried herb can be powdered and encapsulated.

Adult tincture dosage: ½–1 teaspoon of 1:3 tincture, 3 or 4 times per day

CAUTIONS/CONTRAINDICATIONS

White horehound overdose can, paradoxically, cause heart palpitations and nausea.

WILD LETTUCE

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
White lettuce	*Lactuca* spp.	Asteraceae

In addition to its usefulness in reducing anxiety, this herb's pain-relieving properties earn it a place in any herbalist's apothecary.

PARTS USED | **AERIAL PARTS**

MAIN ACTIONS

- Anxiolytic
- Analgesic
- Soporific

MEDICINAL USES

Anti-anxiety. Wild lettuce is probably best known for its ability to reduce anxiety, which is what I primarily use it for, with good

results. There are some 50 species of *Lactuca* around the world, and while *L. virosa* is most commonly used for this particular medicinal effect, other species, such as *L. serriola*, will work as well.

Soporific. Because wild lettuce calms the mind and is often helpful in inducing sleep, it can be an important ingredient in formulas for insomnia. It is particularly helpful in the case of coughing or general respiratory discomfort that is keeping a person from falling asleep.

Eliminative. As an aquaretic, wild lettuce will increase urination. It can also stimulate menstruation in cases of amenorrhea.

Pain relief. Though many herbs can help alleviate pain, it's difficult to achieve the same level of pain relief as one can with pharmaceuticals. Wild lettuce is one of those herbs that comes close for a lot of people.

Acne. Taken internally, wild lettuce can reduce teenage acne; I have had a lot of success using it for this purpose. I have often wondered whether there is a relationship between anxiety and teenage hormones that contributes to its efficacy.

SPECIAL NOTES

The plant's genus name, *Lactuca*, means "milky sap," which is what you will find when you cut the stalk or a leaf. This white sap is sometimes called latex but it has nothing to do with actual latex, and there is no need to worry about latex allergies when handling or using wild lettuce.

PREPARATION AND DOSAGE

As a group, the collection of constituents that form the milky sap of wild lettuce are called lactucarium. A few of the more active constituents are lactucin, lactucerin, lactucopicrin, and hyoscyamine. Some of these important constituents are more soluble in alcohol, while others are more soluble in water.

Lactucarium Extraction

Lactucarium can be extracted as a solid substance by decocting the dried leaves down to a thick syrupy paste, then straining out the leaves before drying the paste in a food dehydrator or in the sun. Using alcohol as a solvent during the decoction process will greatly increase the final yield — add enough alcohol to make up about 30 percent of the decoction liquid and let it evaporate as the mixture simmers.

The final product will be a dark brown to black, tarry solid that is about a 10:1 concentrate of lactucarium and very potent. Stored in an airtight canning jar, it will keep indefinitely.

You can reconstitute it as a liquid by mixing it with 30 to 40 percent ABV alcohol; it will not dissolve completely into high percentage alcohol. For example, if your concentration is 10:1 (you started with 100 grams of dried wild lettuce and ended up with 10 grams of dried lactucarium), then you can mix 1 gram of that lactucarium with 30 ml of 30 percent ABV alcohol to give you the equivalent of a 1:3 ratio tincture.

Multifractional Extract

Wild lettuce is a good candidate for multifractional extraction, but I get better results when a high-temperature decoction is not part of the process. Too much heat seems to degrade at least one of the active constituents (possibly lactucin). However, a multifractional extraction process that avoids heat over 120°F/49°C is worth the trouble.

Tincture

A maceration tincture of the fresh plant is an effective extraction. Any alcohol in the range of 40 to 60 percent ABV is adequate.

Harvest the plants by cutting the stems at ground level when they are beginning to flower. Let the plants wilt for 24 hours to reduce their water content. Blend the wilted plants with about 50 percent ABV alcohol. Make this “smoothie” as thick as possible while still allowing some movement between the plant parts and the alcohol.

Let the tincture sit for 3 to 4 weeks, shaking it several times a day. For the best results, heat the tincture to between 110° and 120°F/43° and 49°C and hold it at that temperature for the entire maceration period. If that isn’t possible, bring it to that temperature for a few hours a day, every day or as often as you can. Blend the mixture for 30 to 60 seconds before straining into a storage container.

A percolation tincture using 50 percent ABV with the dried herb is also an adequate extraction for use.

Adult tincture dosage: ½–1 teaspoon of 1:1 fresh or 1:3 dried tincture, 1–4 times per day

CAUTIONS/CONTRAINDICATIONS

Avoid wild lettuce during pregnancy, especially the first trimester. Wild lettuce can build up toxicity with prolonged use, and an overdose can lead to nausea, vomiting, dizziness, sweating, and dry mucosa. Take this herb in formula, within the dosage limitations, for no more than 2 to 3 weeks without a break of an equal amount of time.

WILD YAM

BOTANICAL NAME:	**FAMILY:**
Dioscorea villosa	Dioscoreaceae

Wild yam root is notable for its effectiveness in reducing inflammation. It is also well known as a supportive herb for the female reproductive tract.

PART USED | **ROOT**

MAIN ACTIONS

- Anti-inflammatory, analgesic

- Supportive for female reproductive tract
- Liver decongestant

MEDICINAL USES

Pain relief. As an anti-inflammatory, wild yam is useful in most situations where there is a cycle of chronic illness or injury, such as musculoskeletal inflammation, osteoarthritis and rheumatoid arthritis, fibromyalgia and lupus, gut inflammation, and autoinflammatory responses, including the skin (e.g., eczema). It combines well with devil's claw (*Harpagophytum procumbens*), meadowsweet (*Filipendula ulmaria*), frankincense (*Boswellia* spp.), and heartsease (*Viola tricolor*).

Female health. Wild yam is well known for supporting the female reproductive tract. In helping the body to balance hormones, it has positive effects on not just sex hormones but also adrenal ones, making it useful for modulating the stress response as well. It can help with menstrual issues like dysmenorrhea and pain; it also helps with pain during labor and postpartum and with nausea and vomiting during pregnancy.

Liver congestion. As a mild liver decongestant, this a good herb to consider for liver and digestive support formulas to assist in gut issues that can include irritable bowel syndrome (IBS) symptoms such as bloating, cramping, indigestion, reflux, and diarrhea. It works well in this context with other liver-supportive herbs like dandelion (*Taraxacum officinale*) root and leaf, and milk thistle (*Silybum marianum*).

SPECIAL NOTES

There has been some controversy over whether wild yam could be a source of estrogen or progesterone via the body's conversion of a constituent called diosgenin. Research indicates that this probably is not the case. Regardless, this is not a fully literate way to approach a potential imbalance of female reproductive hormones. While wild yam can play a role in helping balance female sex hormones, due to the other roles it likely plays in the body's inflammatory responses, it should not be treated as a bioidentical hormone to be given to a woman in menopause with diminishing estrogen levels.

PREPARATION AND DOSAGE

The steroidal saponins that give wild yam much of its medicinal effectiveness are soluble in both water and alcohol. The root can be tinctured, fresh or dried, in alcohol with an ABV ranging from 50 to 60 percent.

Topically, it works well in a poultice, plaster, oil, or salve.

Adult tincture dosage: ½–1 teaspoon of 1:3 tincture, 1–4 times per day

CAUTIONS/CONTRAINDICATIONS

Wild yam should be used with caution during pregnancy. This amazing herb is at risk due to overharvesting. It is extremely

easy to grow, and should be bought only as a cultivated herb rather than wildcrafted.

WORMWOOD

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Absinth, madderwort	*Artemisia absinthium*	Asteraceae

Wormwood is probably well-known to many as one of the primary ingredients in the liquor known as absinthe. However, this plant has also been used for its amazing medicinal properties for centuries throughout Eurasia, Northern Africa, and probably many other regions.

PARTS USED | **AERIAL PARTS**

MAIN ACTIONS

- Liver decongestant
- Anti-infective (parasites, fungus, bacteria)
- Eliminative
- Anti-inflammatory

MEDICINAL USES

Wormwood is a strong bitter with many profound medicinal effects. It is stronger as a bitter and liver decongestant than mugwort (*Artemisia vulgaris*) and sweet Annie (*A. annua*), its two cousins in this materia medica, and it is very useful for acute infectious disease as well.

Liver congestion. Wormwood is a powerful liver decongestant and anti-inflammatory for gut mucosa. It works very well in formulas for IBS, small intestinal bacterial overgrowth (SIBO), leaky gut, gastroesophageal reflux disease (GERD), nausea and/or vomiting, and poor digestion. It improves bile flow and facilitates better digestion, but can also be used in formulas to support liver recovery from viral infections such as hepatitis A, B, or C.

Eliminative. As an eliminative, wormwood makes a great addition to most flu formulas, especially stomach flu. It is a diaphoretic and aquaretic, reduces nausea and vomiting, and can help reduce inflammation both in the liver and the urinary tract, including the kidneys.

Anti-infective. As the common name indicates, wormwood has a history of use for parasitic infections and is one of the primary herbs in most antiparasitic (especially roundworm) and antiprotozoal formulas. Wormwood is also antifungal and can be used topically with herbs like neem (*Azadirachta indica*) and black walnut (*Juglans nigra*) for roundworm as well as internally for candidiasis overgrowth.

Wormwood can also be used topically or internally for bacterial infections. It is likely more effective against gram

positive bacteria (e.g., staph and strep) and works well in formulas that include sweet Annie for this purpose.

Anti-inflammatory. Aside from its use as an anti-inflammatory in the gut, wormwood works in a similar fashion to mugwort and can be used topically for strains, sprains, contusions, swelling, and local inflammation. It also works well for venomous bites and stings such as those of bees, wasps, and fire ants.

PREPARATION AND DOSAGE

Wormwood can be prepared fresh or dried as an infusion, decoction, glycerite, tincture, oil or salve, or powdered and encapsulated. It is definitely on the bitter side of the taste spectrum and is a lot easier to tolerate as a tincture or glycerite than an infusion. I prefer to tincture dried wormwood in a 50 percent ABV percolation. The fresh herb I prefer to tincture in 60 percent ABV.

Adult tincture dosage: ½–1 teaspoon of 1:4 dried tincture or 1:2 fresh tincture, 1–3 times per day

CAUTIONS/CONTRAINDICATIONS

Wormwood is contraindicated during pregnancy and breastfeeding. It is a medium-toxicity herb that shouldn't be taken for more than about 3 weeks at a time without a break for the equivalent amount of time.

YARROW

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Milfoil	*Achillea millefolium*	Asteraceae

Traditionally used to heal wounds, yarrow is also an outstanding cold and flu herb.

PARTS USED | **WHOLE PLANT**

MAIN ACTIONS

- Aquaretic, diaphoretic
- Anti-infective
- Styptic
- Stimulates circulation

MEDICINAL USES

Colds and flu. With diaphoretic, aquaretic, and anti-infective properties, yarrow is a superlative cold and flu herb. It combines well with elder (*Sambucus* spp.) flower and prickly ash (*Zanthoxylum* spp.) in this regard.

Wound healing. Traditionally considered an excellent wound healer, yarrow can be used as a styptic to help stop bleeding. Somewhat paradoxically, it is also an astringent that helps break

up congealed blood and congested tissue in wounds, which increases circulation and detoxification. These actions benefit not only open wounds but also bruises, strains, sprains, and other closed soft tissue injuries.

Female health. A traditional midwifery herb, yarrow helps normalize dysmenorrhea, normalizes uterus function, and assists with PMS, cramping, menstrual pain, and spotting.

Pain relief. As an antispasmodic, yarrow is useful for easing the general pain that may accompany conditions such as angina pectoris, digestive cramping, anxiety-related heart palpitations, and asthma-related spasmodic pain.

PREPARATION AND DOSAGE

Yarrow roots, leaves, flowers, and seeds vary in minor ways in terms of their medicinal properties but are generally interchangeable. They can be prepared fresh or dried (though I prefer the effects of the fresh plant extracts) as a tincture (using about 40 percent ABV alcohol), infusion, decoction, syrup, oil, salve, poultice, plaster, or eyewash. The whole plant can also be freshly juiced. Dried yarrow can be powdered and encapsulated.

Adult tincture dosage: ½–1 teaspoon of 1:3 tincture, 1–5 times per day

CAUTIONS/CONTRAINDICATIONS

As a mild to moderate uterine stimulant, yarrow should be avoided in the first trimester of pregnancy.

YERBA MANSA

OTHER COMMON NAMES:	**BOTANICAL NAME:**	**FAMILY:**
Lizard's tail, yerba del manso	*Anemopsis californica*	Saururaceae

Yerba mansa is an incredible medicine that can be used for a plethora of conditions throughout the respiratory and genitourinary tracts, skin, mucosa, and more.

PARTS USED | **ROOT, LEAF**

MAIN ACTIONS

- Respiratory support
- Anti-infective, antibacterial

MEDICINAL USES

Sinus and respiratory tract infections. I frequently use yerba mansa to help the body overcome acute upper respiratory infections. This herb can turn around an upper respiratory tract infection (if caught at the outset) in a matter of hours or days, and it is one of my go-to herbs for sinus infections, whether taken orally, sublingually, or (my favorite) as a neti pot rinse.

Although it is bitter and astringent, it is palatable in lozenge or even tea form, particularly in formulas with other better-flavored herbs. This herb formulates very well for acute upper respiratory infections with spilanthes (*Spilanthes acmella*), echinacea (*Echinacea* spp.), bee balm (*Monarda* spp.), prickly ash (*Zanthoxylum* spp.), usnea (*Usnea* spp.), and goldenrod (*Solidago* spp.).

Allergies. Yerba mansa's astringent, anti-inflammatory, and drying effects can greatly help allergies that create a lot of nasal

congestion, runny nose, and mucosal irritation.

Kidney support. As an aquaretic, yerba mansa is helpful in formulas where good kidney elimination is needed, such as formulas for gout, rheumatoid arthritis, and UTIs.

Antibacterial. This herb is strongly antibacterial and antifungal and works well, topically or internally, for infections of the skin, the genitourinary tract, the mouth (including canker sores), and for infected wounds.

SPECIAL NOTES

Yerba mansa loves wet, boggy areas; it is common in low-lying meadows around hot springs in the southwest United States. It is sensitive to disturbances and needs some caretaking to thrive. In spite of that, it is easy to transplant, and if you are able to grow it, I highly recommend doing so as it is at risk of overharvesting in the wild.

PREPARATION AND DOSAGE

I would venture to say that most herbalists use only the roots — which are arguably stronger medicine in some ways — but the leaves are excellent medicine as well. Either (or both) can be used fresh or dried and taken internally or applied externally for a wide spectrum of health issues. I recommend having a supply of dried herb for decocting as well as making poultices, plasters, and compresses.

One of the best ways to take yerba mansa for upper or lower respiratory tract infections is as a steam inhalation or via nebulizer.

I prefer to tincture the root and leaf fresh (using about 50 percent ABV alcohol), but it is also potent medicine when tinctured in dried form (using about 40 percent ABV alcohol).

Adult tincture dosage: ½–1 teaspoon of 1:3 tincture, 1–5 times per day

CAUTIONS/CONTRAINDICATIONS

Yerba mansa may potentiate some pharmaceutical sedatives.

YUCCA

OTHER COMMON NAMES:	BOTANICAL NAME:	FAMILY:
Spanish bayonet, Adam's needle	*Yucca* spp.	Asparagaceae (Agavoideae subfamily)

Yucca is a smorgasbord of survival rolled into one plant. This amazing plant can be used for cordage, fire, hygiene, food, and medicine. It can be found throughout most of North, Central, and South America and thrives in desert conditions. It is an easy, drought-resistant medicinal plant to grow at home.

Note that yucca (*Yucca* spp.) is not the same as *Manihot esculenta*, a plant that is also sometimes called yucca (or yuca) but is more commonly known as cassava, whose root is often used as a starchy vegetable.

PART USED | **ROOT, INCLUDING ROOT BARK**

MAIN ACTIONS

- Natural soap (field hygiene)
- Anti-inflammatory
- Cardiovascular support

MEDICINAL USES

Hygiene. Yucca root contains saponins, and I use it, dried or fresh, in the field as soap and shampoo — a few pieces in a dish of water form a nice little lather. It's long-lasting, too; a piece that's been sitting in your backpack for 2 years is still usable.

Anti-inflammatory. Many of the same saponins that make yucca a wonderful field soap, in concert with other steroidal saponins found in the root, are also strongly anti-inflammatory. In this regard, whether taken internally or applied topically, yucca relieves headaches, all types of musculoskeletal pain, and pain related to autoinflammation (e.g., rheumatoid arthritis).

Cardiovascular support. Steroidal saponins of the kind found in yucca have been shown to lower LDL cholesterol. The root and root bark also contain resveratrol, a strong antioxidant. Both

resveratrol and another constituent, yuccaol, inhibit platelet aggregation and act as blood thinners. For these reasons, yucca is a good herb to consider for cardiovascular health and cardiovascular inflammation related to cardiovascular disease.

SPECIAL NOTES

Interestingly, yucca root is a traditional feed for livestock because it reduces ammonia (and the resulting odor) from livestock excrement. In that regard, it can be used medicinally to get rid of the ammonia breath, or "keto breath," of people on a keto diet.

PREPARATION AND DOSAGE

I prefer to harvest yucca root in the fall, but it can be harvested anytime of the year. If you dig carefully, you can usually harvest part of the root without killing the plant. Don't peel off the bark—it's important to use that when making medicine.

Yucca can be dried, powdered, and encapsulated. Fresh or dried, it can be prepared as an infusion or decoction (be warned that it may lather and foam, especially when fresh) or a glycerite or tincture. Topically, it can be made into a poultice or plaster, infused in oil, or extracted into 40 percent isopropyl alcohol as a liniment.

The simplest extraction for internal use is a tincture, using 40 percent ABV alcohol for the fresh root or 30 percent ABV alcohol for the dried root. It can be macerated or percolated. I prefer a percolation tincture.

Adult tincture dosage: ½–1 teaspoon of 1:3 tincture, 1–5 times per day

CAUTIONS/CONTRAINDICATIONS

It is best to formulate yucca rather than take it as a simple. Long-term use of saponins can reduce the uptake of micronutrients from the gut and should be avoided. My preference is to formulate yucca for internal use and take it for no longer than 6 weeks without stopping for an equivalent period of time.

Common and Latin Names of Materia Medica Herbs

Common Name	Latin Name	Common Name	Latin Name
Algerita	*Berberis trifoliolata*	Chamomile	*Matricaria recutita*
Andrographis	*Andrographis paniculata*	Chaparral	*Larrea tridentata*
Arnica	*Arnica chamissonis*	Chaste tree	*Vitex agnus-castus*
Ashwagandha	*Withania somnifera*	Comfrey	*Symphytum officinale*

Common and Latin Names of Materia Medica Herbs

Common Name	Latin Name	Common Name	Latin Name
Astragalus	*Astragalus membranaceus*	Cramp bark	*Viburnum opulus*
Bacopa	*Bacopa monnieri*	Dandelion	*Taraxacum officinale*
Baikal skullcap	*Scutellaria baicalensis*	Devil's claw	*Harpagophytum procumbens*
Bee balm	*Monarda* spp.	Echinacea	*Echinacea* spp.
Bilberry	*Vaccinium myrtillus*	Elder	*Sambucus nigra*
Birch	*Betula* spp.	Elecampane	*Inula helenium*
Black walnut	*Juglans* spp.	Eleuthero	*Eleutherococcus senticosus*
Boneset	*Eupatorium perfoliatum*	Feverfew	*Tanacetum parthenium*
Bugleweed	*Lycopus* spp.	Gentian	*Gentiana lutea*
Burdock	*Arctium lappa*	Ginger	*Zingiber officinale*

Common and Latin Names of Materia Medica Herbs

Common Name	Latin Name	Common Name	Latin Name
Butterbur	*Petasites hybridus*	Gotu kola	*Centella asiatica*
Calendula	*Calendula officinalis*	Gumweed	*Grindelia* spp.
California poppy	*Eschscholzia californica*	Horsetail	*Equisetum* spp.
Chameleon plant	*Houttuynia cordata*	Juniper	*Juniperus* spp.
Licorice	*Glycyrrhiza glabra*	Prickly pear	*Opuntia* spp.
Lobelia	*Lobelia inflata*	Red root	*Ceanothus* spp.
Marshmallow	*Althaea officinalis*	Rosemary	*Rosmarinus officinalis*
Meadowsweet	*Filipendula ulmaria*	Saint John's wort	*Hypericum perforatum*
Milk thistle	*Silybum marianum*	Self-heal	*Prunella vulgaris*

Common and Latin Names of Materia Medica Herbs

Common Name	Latin Name	Common Name	Latin Name
Motherwort	*Leonurus cardiaca*	Sida	*Sida* spp.
Mugwort	*Artemisia vulgaris*	Skullcap	*Scutellaria lateriflora*
Mullein	*Verbascum thapsus*	Sweet Annie	*Artemisia annua*
Myrrh	*Commiphora* spp.	Usnea	*Usnea* spp.
Neem	*Azadirachta indica*	White horehound	*Marrubium vulgare*
Nettle	*Urtica* spp.	Wild lettuce	*Lactuca* spp.
Oregon grape	*Mahonia* spp.	Wild yam	*Dioscorea villosa*
Parsley	*Petroselinum crispum*	Wormwood	*Artemisia absinthium*
Passionflower	*Passiflora incarnata*	Yarrow	*Achillea millefolium*

Common and Latin Names of Materia Medica Herbs

Common Name	Latin Name	Common Name	Latin Name
Plantain	*Plantago* spp.	Yerba mansa	*Anemopsis californica*
Pleurisy root	*Asclepias tuberosa*	Yucca	*Yucca* spp.
Poke	*Phytolacca americana*		
Prickly ash	*Zanthoxylum* spp.		

Common and Latin Names of Herbs Not Listed in the Materia Medica

Common Name	Latin Name	Common Name	Latin Name
American ginseng	*Panax quinquefolius*	Cordyceps	*Cordyceps sinensis*
Anemone	*Anemone berlandieri*	*Corn silk*	*Zea mays*

Common and Latin Names of Herbs Not Listed in the Materia Medica

Common Name	Latin Name	Common Name	Latin Name
Artichoke	*Cynara scolymus*	*Cotton root bark*	*Gossypium herbaceum*
Bearberry	*Arctostaphylos uva-ursi*	*Cranberry*	*Vaccinium macrocarpon*
Bethroot	*Trillium pendulum*	*Dahurian angelica*	*Angelica dahurica*
Black cohosh	*Actaea racemosa*	*Damiana*	*Turnera diffusa*
Black haw	*Viburnum prunifolium*	*Dong quai*	*Angelica sinensis*
Blessed thistle	*Cnicus benedictus*	*Eyebright*	*Euphrasia officinalis*
Blue flag	*Iris versicolor*	*Goatweed*	*Ageratum conyzoides*
Butcher's-broom	*Ruscus aculeatus*	*Goldenrod*	*Solidago* spp.
Camphorweed	*Heterotheca* spp.	*Goldenseal*	*Hydrastis canadensis*

Common and Latin Names of Herbs Not Listed in the Materia Medica

Common Name	Latin Name	Common Name	Latin Name
Canadian fleabane	*Erigeron canadensis*	*Greater celandine*	*Chelidonium majus*
Cardamom	*Elettaria cardamomum*	*Gravel root*	*Eupatorium purpureum*
Cayenne	*Capsicum annuum*	*Hawthorn*	*Crataegus* spp.
Chickweed	*Stellaria media*	*Heartsease*	*Viola tricolor*
Chicory	*Cichorium intybus*	*Hibiscus*	*Hibiscus sabdariffa*
Chinese black cardamom	*Alpinia oxyphylla*	*Hops*	*Humulus lupulus*
Chinese senega	*Polygala tenuifolia*	*Indian snakeroot*	*Rauwolfia erpentina*
Cinnamon	*Cinnamomum cassia*	*Jamaican dogwood*	*Piscidia piscipula*
Cleavers	*Galium aparine*	*Japanese dogwood*	*Cornus officinalis*

Common and Latin Names of Herbs Not Listed in the Materia Medica

Common Name	Latin Name	Common Name	Latin Name
Japanese knotweed	*Polygonum cuspidatum*	*Red clover*	*Trifolium pratense*
Kava	*Piper methysticum*	*Red sage*	*Salvia miltiorrhiza*
Lantana	*Lantana* spp.	*Reishi*	*Ganoderma lucidum*
Lemon balm	*Melissa officinalis*	*Rhodiola*	*Rhodiola rosea*
Linden	*Tilia* spp.	*Schisandra*	*Schisandra chinensis*
Lion's mane	*Hericeum erinaceus*	*Shepherd's purse*	*Capsella bursa-pastoris*
Ma huang	*Ephedra sinica*	*Shiitake*	*Lentinula edodes*
Maitake	*Grifola frondosa*	*Silk tassel*	*Garrya* spp.
Mesquite	*Prosopis* spp.	*Silvery lupine*	*Lupinus argenteus*

Common and Latin Names of Herbs Not Listed in the Materia Medica

Common Name	Latin Name	Common Name	Latin Name
Mexican hat	*Ratibida columnifera*	*Spearmint*	*Mentha spicata*
Oak	*Quercus* spp.	*Spilanthes*	*Acmella oleracea*
Ocotillo	*Fouquieria splendens*	*Stillingia*	*Stillingia* spp.
Ox knee	*Achyranthes bidentata*	*Thyme*	*Thymus vulgaris*
Papaya	*Carica papaya*	*Turkey tail*	*Trametes versicolor*
Pedicularis	*Pedicularis* spp.	*Uva ursi*	*Arctostaphylos uva-ursi*
Peppermint	*Mentha × piperita*	*Wild cherry*	*Prunus serotina*
Perilla	*Perilla frutescens*	*Wild geranium*	*Geranium* spp.
Pomegranate	*Punica granatum*	*Wild indigo*	*Baptisia tinctoria*

Common and Latin Names of Herbs Not Listed in the Materia Medica

Common Name	Latin Name	Common Name	Latin Name
Prickly poppy	*Argemone* spp.	*Witch hazel*	*Hamamelis virginiana*
Raspberry	*Rubus idaeus*		

GLOSSARY

ACUTE. Referring to a condition that develops suddenly and presents severe or intense symptoms but is generally of limited duration.

ADAPTOGEN. An herb that helps the body deal with the effects of chronic stress.

ADSORB. To take up and hold on the surface, as charcoal does with bacteria.

AERIAL PARTS. All parts of a plant from a few inches above the ground.

ANALGESIC. Reduces pain.

ANTHELMINTIC. Kills parasites, particularly internal infestations.

ANTIBACTERIAL. Inhibits bacterial growth.

ANTIMICROBIAL. Kills pathogenic microbes.

ANTIPROTOZOAL. Kills single-celled parasites such as *Giardia* spp. and *Cryptosporidium* spp.

ANTISEPTIC. Prevents the growth of disease-causing microorganisms.

AQUARETIC. Promotes the increased flow of urine without also promoting electrolyte loss. *See also* Diuretic.

ASSESSMENT. The evaluation and estimation of a patient, condition, illness, or injury.

ASTRINGENT. Tightens tissue, assisting in conditions like bleeding and diarrhea.

CARMINATIVE. Relieves digestive discomfort, flatulence, and the like.

CHOLAGOGUE. Decongests bile flow, enhances bile quality and quantity, and assists digestion.

CHRONIC. A long-term or persistent condition.

CONSTITUENT. The elements, or "active ingredients," in pharmacological terms, of an herb that have a medical effect on the body.

CONTRAINDICATION. A condition that makes a particular treatment or herbal protocol potentially inadvisable.

COUNTERIRRITANT. A preparation that causes mild inflammation of the skin; used to relieve symptoms of an underlying inflammation and/or to increase blood flow to an affected area.

DECOCTION. A strong extraction prepared by simmering herbs in water over low heat for a long time to concentrate the

constituents. *See also* Infusion.

DEMULCENT. Soothes and protects damaged tissue; also, an herb with a mucilaginous consistency that has similar mitigating effects. *See also* Mucilaginous.

DIAPHORETIC. Opens the skin elimination channel and promotes sweating.

DISTAL. Positioned away from the center or trunk of the body or from the attachment point of a limb. *See also* Proximal.

DIURETIC. Promotes the increased flow of urine and, along with it, sodium, waste products, and toxins. *See also* Aquaretic.

DOSAGE. The quantity and frequency of administration of a medication or preparation.

DROPWISE DOSAGE. A very small dosage measured in individual drops rather than a dropperful or teaspoon; used for particularly potent or somewhat toxic tinctures.

DYSMENORRHEA. Painful periods or menstrual cramps.

DYSPEPSIA. Gastric upset, pain, and/or bloating.

EMMENAGOGUE. Stimulates or increases menstrual flow.

ENEMA. A rectal injection for clearing out the bowel or for administering drugs or food.

EXPECTORANT. Promotes the creation and expulsion of phlegm.

EXTERNAL. Used topically on the outside of the body rather than taken internally.

FORMULA. A combination of herbs or single-herb tinctures designed to produce a specific effect.

GALACTAGOGUE. Promotes or increases the flow and supply of breast milk.

GLYCERITE. A glycerin tincture, prepared by soaking dried or fresh herb in glycerin and then straining.

HEMOSTATIC. Reduces or stops bleeding.

HEPATIC. Tones the liver and stimulates bile production.

HYPERTENSION. High blood pressure.

IMMUNE ENHANCER/STIMULANT. Increases the effectiveness and activity of the immune system.

IMMUNE MODULATOR. Regulates an underactive or overactive immune system.

INFUSION. A strong tea made by steeping herbs in water, usually hot, but sometimes cold. *See also* Decoction.

LYMPH. The fluid, similar to blood plasma, that circulates through the lymph system from tissues to the bloodstream.

LYMPHAGOGUE. Promotes or increases the production or flow of lymph.

MACERATION TINCTURE. Preparation method where the herb is soaked in a measured amount of solvent for a period of time, shaken daily, and strained before using.

MENSTRUUM. Any solvent used for extracting medicinal compounds from plants.

MUCILAGINOUS. Having a moist, sticky, gelatinous consistency that coats and soothes. *See also* Demulcent.

MUCOSA. Mucous membrane.

MUCOSAL VULNERARY. Promotes tissue healing in and protects the mucosal tracts.

NERVINE. Having an affinity for the nervous system; usually calming, relaxing, and anxiety relieving.

ORGANOLEPSIS. Using your sensory organs to connect a plant with what it could potentially do for you.

PALPATION. Examination with the hands, feeling for organs, masses, injuries, pulse, and vibrations in the chest.

PALPITATION. Abnormal or racing heartbeats.

PATHOPHYSIOLOGY. Observed changes associated with an illness, disease, or injury.

PERCOLATION TINCTURE. Preparation method where a solvent percolates (drips through) a powdered herb.

PLASTER. A therapeutic paste that is applied directly to the skin as opposed to being separated from the skin by gauze or other barrier. *See also* Poultice.

POLYSACCHARIDES. Complex carbohydrates, such as starch and cellulose, that are arguably the primary immune-modulating constituents in herbs, in particular for submucosal lymph and immune cells.

POULTICE. A therapeutic paste, typically made from herbs and warm water, applied to an injury through a clean cloth or gauze, rather than directly to the skin. *See also* Plaster.

PROTOCOL. A detailed medical treatment, plan, or procedure.

PROXIMAL. Positioned near the center or trunk of the body or closer to the attachment point of a limb. *See also* Distal.

SIMPLE. A tincture or other herbal extract made with a single herb.

SOLVENT. A liquid that is capable of dissolving another substance or, in the case of herbs, extracting the medicinal properties or constituents from the plant.

TINCTURE. An herbal preparation that uses ethanol alcohol as the primary solvent for extracting properties.

TRAUMA. A physical wound to the body from an external source or accident.

VASOCONSTRICTOR. Tightens blood vessels.

VASODILATOR. Expands blood vessels.

VULNERARY. Protects tissue and promotes tissue healing; also, any herb having those properties.

RECOMMENDED READING

Basch, Ethan and Catherine Ulbricht. *Natural Standard Herb & Supplement Handbook*

A good "Western biochemical" book.

Bown, Deni. *Herbal: The Essential Guide to Herbs for Living*

Decent beginning book for herb use, gardening, and even cooking. Somewhat superficial but has decent photographs and a few gems of information.

Buhner, Stephen Harrod. *The Lost Language of Plants*

An absolute must-read for anyone interested in plant medicine; explores the deeper relationship between our species and plant medicine in a way that opens the reader's mind.

Davis, Wade. *One River: Explorations and Discoveries in the Amazon Rain Forest*

An extremely well-written book by one of America's premiere botanists, who explores the connection between plants (for healing and other uses)in Mesoamerica, South America, and the United States.

Garrett, J. T. *The Cherokee Herbal: Native Plant Medicine from the Four Directions*

A wonderful resource specific to Cherokee plant medicine, which is an extremely important facet of modern herbal medicine.

Green, James. *The Herbal Medicine-Maker's Handbook: A Home Manual*

This is the current gold standard for herbal medicine making. Well-written and organized, it belongs on any medicine maker's bookshelf.

Hoffmann, David. *Medical Herbalism: The Science Principles and Practices of Herbal Medicine*

A more advanced book than *The New Holistic Herbal*. These books work very well together.

—— *The New Holistic Herbal*

One of the best books I know of for beginners but also a great reference for advanced herbalists. Well written and concisely organized by organ systems, it covers a wide spectrum of information outside the material medica, including good formulas that make sense.

Holmes, Peter. *The Energetics of Western Herbs (4th Edition; 2 volumes)*

A superb reference work that covers 220 remedies and explores both traditional and modern methods. If I was trapped on a desert island and could only have one book (well, set of two books in this case), this would be it.

Kindscher, Kelly. *Medicinal Wild Plants of the Prairie: An Ethnobotanical Guide*

A very useful guide that details Native American uses of medicinal plants found primarily throughout the Great Plains of the United States.

Moerman, Daniel E. *Native American Ethnobotany*

An outstanding resource with over 900 pages on plant medicine throughout North America, broken down by plant and by tribe.

Moore, Michael. *Medicinal Plants of the Desert and Canyon West*; *Medicinal Plants of the Mountain West*; *Medicinal Plants of the Pacific West*

Although centered more on the west and southwest United States and northern Mexico, all of Michael Moore's books must-haves for any herbalist's library. Michael was arguably the most influential herbalist of the late twentieth century, and his books demonstrate why. The books are similar in structure with the plants separated by region.

Murray, Michael T. and Joseph Pizzorno. *Encyclopedia of Natural Medicine* (3rd Edition)

More of a nutrition and general holistic health book, but a very good breakdown on a biochemical level of many disease processes and natural healing for them.

Pederson, Mark. *Nutritional Herbology*

Good biochemical standpoint book that also references a lot of traditional and folk (ethnobotanical) uses.

Rogers, Robert Dale. *The Unique Herbal* (5 volumes)

As your herbal studies advance, it is critical to learn about as many medicinal plants as you can. This set of books is loaded with information about lesser-known medicinal plants; I don't know another resource that covers as much.

Ross, Jeremy. *Combining Western Herbs and Chinese Medicine*

An in-depth look at the practical integration of vitalism and biochemical herbalism covering some 60 herbs in great detail.

Skenderi, Gazmend. *Herbal Vade Mecum*

Excellent one-stop, quick reference for 800 herbs; good as a quick reference for reminders, contraindications, constituents, and so on.

Tillotson, Alan Keith. *The One Earth Herbal Sourcebook*

Good overall reference book with a decent mix of Western, Chinese, and Ayurvedic therapies; definitely a good addition to an herbal library.

Wood, Matthew. *The Practice of Traditional Western Herbalism*

Very interesting approach to herbology that mixes traditional Greek medicine with Western energetics.

HERB SUPPLIERS

In an ideal world, we could grow and/or forage all of our plants for making medicine but few herbalists can produce anywhere near the range of herbs that are available to us. Here are a few suppliers of dried herbs and medicine-making materials that I use regularly:

1st Chinese Herbs

https://1stchineseherbs.com

Mountain Rose Herbs

https://mountainroseherbs.com

Oregon Mushrooms

www.oregonmushrooms.com

Pacific Botanicals

www.pacificbotanicals.com

Starwest Botanicals

www.starwest-botanicals.com

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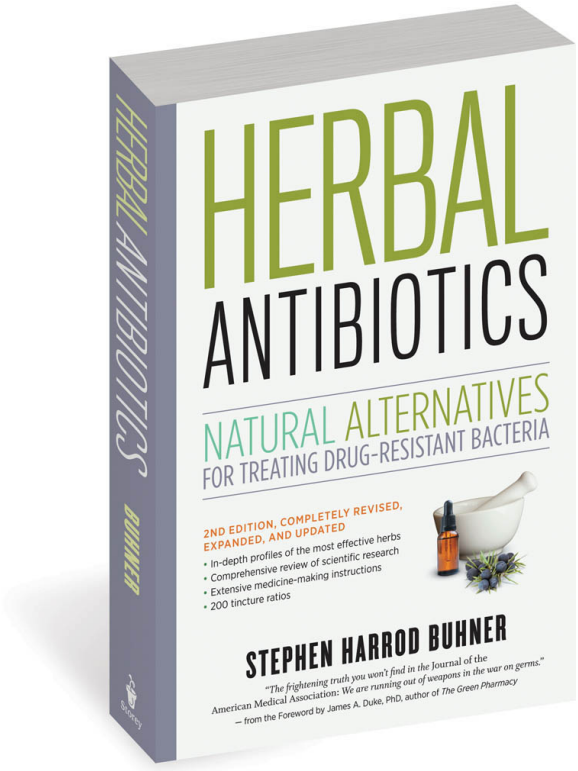
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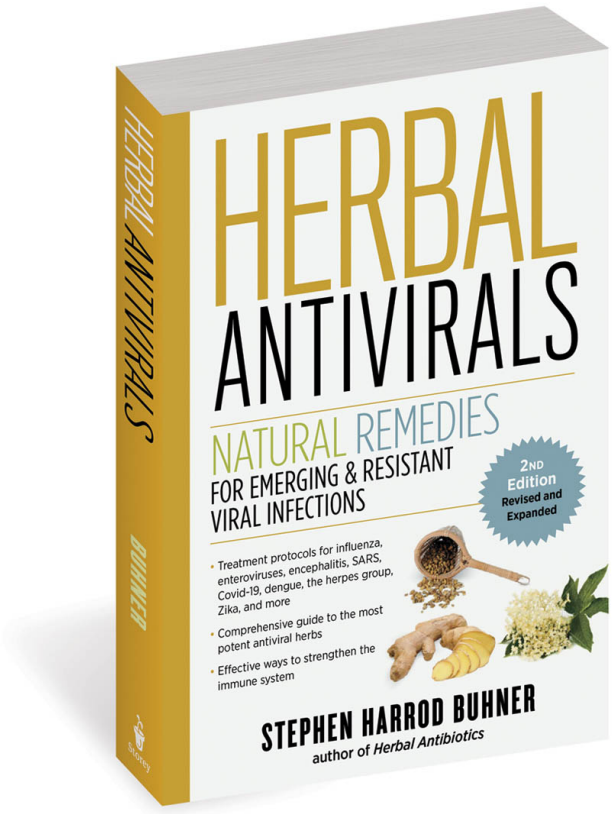

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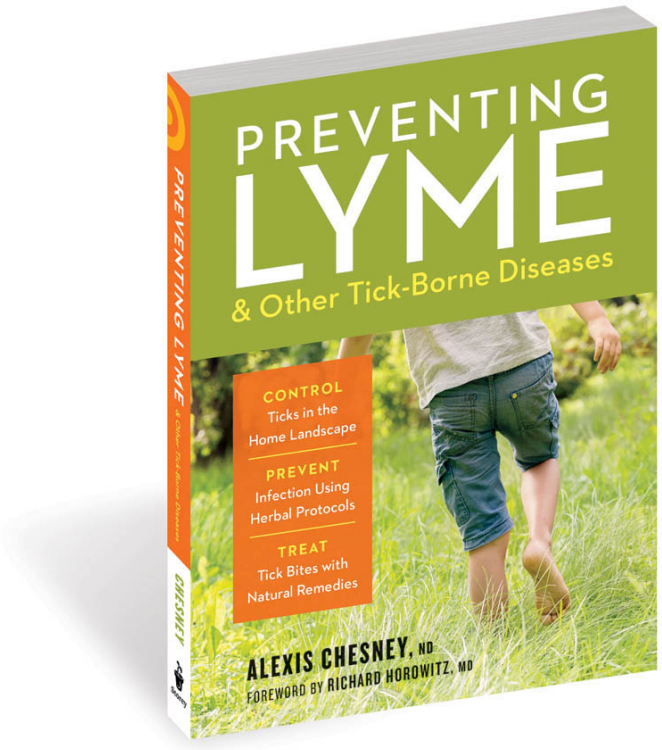

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